

# William A. Edelstein

Visiting Distinguished Professor of Radiology  
Russel H. Morgan Department of Radiology and Radiological Sciences, MRI Division  
Johns Hopkins University School of Medicine  
600 N Wolfe St-Park 328, Baltimore, MD 21205  
410-955-9617 Office, 410-614-1977 FAX, 410-336-6100 Mobile  
[w.edelstein@gmail.com](mailto:w.edelstein@gmail.com), [www.mri.jhu.edu/~edelstei](http://www.mri.jhu.edu/~edelstei)

## Professional Interests

MRI Science and Applications; Medical Instrumentation; Electromagnetics and RF Applications;

## Other Interests

Voting Technology and Voting Processes, Environmental Science and Technology,

## Education and Training

Institution	Location	Degree or position	Discipline/ Department	Date
University of Illinois at Urbana-Champaign	Urbana-Champaign, IL, USA	B.S.	Physics	June, 1965
Harvard University	Cambridge, MA, USA	A.M.	Physics	June, 1967
Harvard University	Cambridge, MA, USA	Ph.D.	Physics	June, 1974
University of Glasgow	Glasgow, Scotland, UK	Research Fellow	Natural Philosophy (Physics)	June, 1974-Sept., 1977
University of Aberdeen	Aberdeen, Scotland, UK	Research Fellow	Medical Physics and Biomedical Engineering	Sept. 1977-Sept., 1980

## Professional Experience

Dates	Position	Institution/location
Sept. 1980-Nov. 2001	Physicist	General Electric Corporate Research and Development, Schenectady, NY, USA
Sept. 1994-Sept. 1995	Visiting Research Professor	Department of Environmental Engineering, Rensselaer Polytechnic Institute, Troy, NY, USA
Jan. 2001-Sept. 2006	Visiting Scientist	Department of Physics, Applied Physics and Astronomy, Rensselaer Polytechnic Institute, Troy, NY, USA
Jan. 2005-Jan. 2006	Senior Research Associate	Department of Physics, Case Western Reserve University, Cleveland, OH, USA
Jan. 2002-Feb 2007	Independent scientist and consultant	Schenectady, NY, USA
Feb 2007-present	Visiting Distinguished Professor	Russel H. Morgan Department of Radiology and Radiological Sciences, Johns Hopkins University School of Medicine, Baltimore, MD

## Awards and Honors

Title of Award	Date	Institution/Organization	Description
Edmund James Scholar	1962-1965	University of Illinois at Urbana-Champaign, Urbana-Champaign, IL, USA	Recognition of high level of student achievement
Brahana Prize in Mathematics	1965	University of Illinois at Urbana-Champaign, Urbana-Champaign, IL, USA	Outstanding Senior in Mathematics
Phi Beta Kappa	1964	University of Illinois at Urbana-Champaign, Urbana-Champaign, IL, USA	
BS granted with Highest Distinction in Physics	1965	University of Illinois at Urbana-Champaign, Urbana-Champaign, IL, USA	Summa Cum Laude
GE Dushman Award for "Outstanding Technical Work on Nuclear Magnetic Resonance, Imaging and Spectroscopy"	1982	General Electric Corporate R&D, Schenectady, NY	Outstanding research achievement
One of America's 100 Brightest Scientists Under 40	1984	<i>Science Digest</i> magazine	
Fellow	1988	American Physical Society	Recognition of outstanding technical contributions in physics
GE Dushman Award for "Outstanding Technical Work on Self-Shielded Gradients for NMR Imaging"	1989	General Electric Corporate R&D, Schenectady, NY	Outstanding research achievement
GE Coolidge Fellow	1990	General Electric Corporate R&D, Schenectady, NY	Highest GE R&D individual recognition
Gold Medal	1990	Society of Magnetic Resonance in Medicine	Recognition of outstanding technical contributions to MRI
Fellow	1996	Institute of Physics, UK	Recognition of outstanding technical contributions in physics
Fellow	1997	International Society of Magnetic Resonance in Medicine	Recognition of outstanding contributions to MRI and ISMRM
AIP Prize for Industrial Applications of Physics	2005	American Institute of Physics	Recognition of outstanding contributions to the development and commercialization of MRI <a href="http://www.aip.org/ca/edelstein.html">http://www.aip.org/ca/edelstein.html</a>
Honorary Degree DSc	2007	University of Aberdeen, Aberdeen, Scotland, UK	Recognition of outstanding contributions to the development of MRI <a href="http://tinyurl.com/97a33g">http://tinyurl.com/97a33g</a>
Alumni Achievement Award	2008	University of Illinois, College of Liberal Arts and Sciences	Recognition of outstanding contributions to the development of MRI <a href="http://tinyurl.com/75fj5t">http://tinyurl.com/75fj5t</a>

## RESEARCH ACTIVITIES

### Publications

#### Research Articles in Peer-Reviewed Journals

1. Miller JW and **Edelstein WA**, "Isotope Effect for Diffusion of Cadmium in Lead." *Physical Review*. 1969; **188** (3): 1081-1088.
2. **Edelstein WA** and Pound RV, "Time-Dependent Directional Correlations of Hg-199m in Liquid Hg, Solid Hg, and HgCl<sub>2</sub>." *Physical Review B*. 1975; **11** (3): 985-989.
3. Hough J, Pugh JR, **Edelstein WA**, and Martin W, "Extension to Noise Theory of RF Squids with Implications for Gravitational Radiation Detectors." *Journal of Physics E-Scientific Instruments*. 1977; **10** (10): 993-997.
4. **Edelstein WA**, Hough J, Pugh JR, and Martin W, "Limits to Measurement of Displacement in an Interferometric Gravitational Radiation Detector." *Journal of Physics E-Scientific Instruments*. 1978; **11** (7): 710-712.
5. Mallard J, Hutchison JMS, **Edelstein WA**, Ling R, and Foster M, "Imaging by Nuclear Magnetic Resonance and Its Biomedical Implications," *Journal of Biomedical Engineering*. 1979; **1**(3): 153-160.
6. Hutchison JMS, **Edelstein WA** and Johnson G, "A Whole-Body NMR Imaging Machine." *Journal of Physics E-Scientific Instruments*. 1980; **13** (9): 947-955.
7. **Edelstein WA**, Hutchison JMS, Johnson G, and Redpath T, "Spin Warp NMR Imaging and Applications to Human Whole-Body Imaging." *Physics in Medicine and Biology*. 1980; **25** (4): 751-756.
8. Bottomley PA and **Edelstein WA**, "Power Deposition in Whole-Body NMR Imaging." *Medical Physics*. 1981; **8** (4): 510-512.
9. **Edelstein WA**, Hutchison JMS, Smith FW, Mallard J, Johnson G, and Redpath TW, "Human Whole-Body NMR Tomographic Imaging - Normal Sections." *British Journal of Radiology*. 1981; **54** (638): 149-151.
10. Hart HR, Bottomley PA, **Edelstein WA**, Leue WM, Schenck JF, and Redington RW, "Imaging with Nuclear Magnetic-Resonance (NMR) in a 0.12-T Resistive Magnet." *Proceedings of the Society of Photo-Optical Instrumentation Engineers*. 1982; **347** 365-371.
11. Bottomley PA, **Edelstein WA**, Leue WM, Hart HR, Schenck JF, and Redington RW, "Head and body imaging by hydrogen nuclear magnetic resonance." *Magnetic Resonance Imaging*. 1982; **1** (1): 69-74.
12. Hart HR, Bottomley PA, **Edelstein WA**, Karr SG, Leue WM, Mueller OM, Redington RW, Schenck JF, Smith LS, and Vatis D, "Technical Alternatives in Nuclear Magnetic-Resonance (NMR) Imaging." *Proceedings of the Society of Photo-Optical Instrumentation Engineers*. 1983; **419** 228-234.
13. Axel L, Kressel HY, Thickman D, Epstein DM, **Edelstein WA**, Bottomley P, Redington R, and Baum S, "NMR Imaging of the Chest at 0.12 T - Initial Clinical- Experience with a Resistive Magnet." *American Journal of Roentgenology*. 1983; **141** (6): 1157-1162.
14. Kressel HY, Axel L, Thickman D, Alavi A, Pollack H, Arger P, **Edelstein WA**, Bottomley P, Redington R, and Baum S, "NMR Imaging of the Abdomen at 0.12 T - Initial Clinical- Experience with a Resistive Magnet." *American Journal of Roentgenology*. 1983; **141** (6): 1179-1186.
15. Zimmerman RA, Bilaniuk LT, Goldberg HI, Grossman RI, Levine RS, Lynch R, **Edelstein WA**, Bottomley P, and Redington R, "Cerebral NMR Imaging - Early Results with a 0.12 T-Resistive System." *American Journal of Roentgenology*. 1983; **141** (6): 1187-1193.
16. Hart HR, Bottomley PA, **Edelstein WA**, Karr SG, Leue WM, Mueller O, Redington RW, Schenck JF, Smith LS, and Vatis D, "Nuclear Magnetic-Resonance Imaging - Contrast-to-Noise Ratio as a Function of Strength of Magnetic-Field." *American Journal of Roentgenology*. 1983; **141** (6): 1195-1201.
17. Bottomley PA, Hart HR, **Edelstein WA**, Schenck JF, Smith LS, Leue WM, Mueller OM, and Redington RW, "NMR Imaging/Spectroscopy System to Study Both Anatomy and Metabolism." *Lancet*. 1983; **2** (8344): 273-274.
18. **Edelstein WA**, Bottomley PA, Hart HR, and Smith LS, "Signal, Noise, and Contrast in Nuclear Magnetic-Resonance (NMR) Imaging." *Journal of Computer Assisted Tomography*. 1983; **7** (3): 391-401.

19. Axel L, Herman GT, Udupa JK, Bottomley PA, and **Edelstein WA**, "3-Dimensional Display of Nuclear Magnetic-Resonance (NMR) Cardiovascular Images." *Journal of Computer Assisted Tomography*. 1983; **7** (1): 172-174.
20. Bilaniuk LT, Zimmerman RA, Wehrli FW, Goldberg HI, Grossman RI, Bottomley PA, **Edelstein WA**, Glover GH, Macfall JR, Redington RW, and Kressel HY, "Cerebral Magnetic-Resonance - Comparison of High and Low Field- Strength Imaging." 042508 *Radiology*. 1984; **153** (2): 409-414.
21. Bilaniuk LT, Zimmerman RA, Wehrli FW, Snyder PJ, Goldberg HI, Grossman RI, Bottomley PA, **Edelstein WA**, Glover GH, Macfall JR, and Redington RW, "Magnetic-Resonance Imaging of Pituitary Lesions Using 1.0 to 1.5-T Field-Strength." 080425 *Radiology*. 1984; **153** (2): 415-418.
22. Bottomley PA, **Edelstein WA**, Hart HR, Schenck JF, and Smith LS, "Spatial Localization in P-31 and C-13 NMR-Spectroscopy In Vivo Using Surface Coils." *Magnetic Resonance in Medicine* 1984; **1** (3): 410-413.
23. Bottomley PA, Hart HR, **Edelstein WA**, Schenck JF, Smith LS, Leue WM, Mueller OM, and Redington RW, "Anatomy and Metabolism of the Normal Human-Brain Studied by Magnetic-Resonance at 1.5 Tesla." *Radiology*. 1984; **150** (2): 441-446.
24. Zimmerman RA, Bilaniuk LT, Goldberg HI, Grossman RI, Levine RS, Lynch R, **Edelstein WA**, Bottomley P, and Redington R, "Cerebral NMR Imaging - Early Results with a 0.12 T Resistive System." *American Journal of Neuroradiology*. 1984; **5** (1): 1-7.
25. Glover GH, Hayes CE, Pelc NJ, **Edelstein WA**, Mueller OM, Hart HR, Hardy CJ, Odonnell M, and Barber WD, "Comparison of Linear and Circular-Polarization for Magnetic- Resonance Imaging." *Journal of Magnetic Resonance*. 1985; **64** (2): 255-270.
26. Bilaniuk LT, Schenck JF, Zimmerman RA, Hart HR, Foster TH, **Edelstein WA**, Goldberg HI, and Grossman RI, "Ocular and Orbital Lesions - Surface Coil MR Imaging." *Radiology*. 1985; **156** (3): 669-674.
27. Zimmerman RA, Bilaniuk LT, Yanoff M, Schenck JF, Hart HR, Foster TH, **Edelstein WA**, Bottomley PA, Redington RW, and Hardy CJ, "Orbital Magnetic-Resonance Imaging." *American Journal of Ophthalmology*. 1985; **100** (2): 312-317.
28. Hayes CE, **Edelstein WA**, Schenck JF, Mueller OM, and Eash M, "An Efficient, Highly Homogeneous Radiofrequency Coil for Whole- Body NMR Imaging at 1.5-T." *Journal of Magnetic Resonance*. 1985; **63** (3): 622-628.
29. Bottomley PA, Redington RW, **Edelstein WA**, and Schenck JF, "Estimating Radiofrequency Power Deposition in Body NMR Imaging." *Magnetic Resonance in Medicine* 1985; **2** (4): 336-349.
30. Zimmerman RA, Bilaniuk LT, Grossman RI, Goldberg HI, **Edelstein WA**, Bottomley P, and Redington RW, "Cerebral NMR - Diagnostic Evaluation of Brain-Tumors by Partial Saturation Technique with Resistive NMR." *Neuroradiology*. 1985; **27** (1): 9-15.
31. Zimmerman RA, Bilaniuk LT, Grossman RI, Levine RS, Lynch R, Goldberg HI, Samuel L, **Edelstein WA**, Bottomley P, and Redington RW, "Resistive NMR of Intracranial Hematomas." *Neuroradiology*. 1985; **27** (1): 16-20.
32. Schenck JF, Hart HR, Foster TH, **Edelstein WA**, Bottomley PA, Redington RW, Hardy CJ, Zimmerman RA, and Bilaniuk LT, "Improved MR Imaging of the Orbit at 1.5-T with Surface Coils." *American Journal of Roentgenology*. 1985; **144** (5): 1033-1036.
33. Bottomley PA, **Edelstein WA**, Foster TH, and Adams WA, "In vivo Solvent-Suppressed Localized Hydrogen Nuclear Magnetic- Resonance Spectroscopy - a Window to Metabolism." *Proceedings of the National Academy of Sciences of the United States of America*. 1985; **82** (7): 2148-2152.
34. Schenck JF, Foster TH, Henkes JL, Adams WJ, Hayes C, Hart HR, **Edelstein WA**, Bottomley PA, and Wehrli FW, "High-Field Surface-Coil MR Imaging of Localized Anatomy." *American Journal of Neuroradiology*. 1985; **6** (2): 181-186.
35. Schenck JF, Hart HR, Foster TH, **Edelstein WA**, Bottomley PA, Redington RW, Hardy CJ, Zimmerman RA, and Bilaniuk LT, "Improved MR Imaging of the Orbit at 1.5 T with Surface Coils." *American Journal of Neuroradiology*. 1985; **6** (2): 193-196.

36. Roberts D, Schenck J, Joseph P, Foster T, Hart H, Pettigrew J, Kundel HL, **Edelstein WA**, and Haber B, "Temporomandibular-Joint - Magnetic-Resonance Imaging." *Radiology*. 1985; **154** (3): 829-830.
37. O'Donnell M and **Edelstein WA**, "NMR Imaging in the Presence of Magnetic-Field Inhomogeneities and Gradient Field Nonlinearities." *Medical Physics*. 1985; **12** (1): 20-26.
38. **Edelstein WA**, Schenck JF, Hart HR, Hardy CJ, Foster TH, and Bottomley PA, "Surface Coil Magnetic-Resonance Imaging." *JAMA-Journal of the American Medical Association*. 1985; **253** (6): 828-828.
39. Zimmerman RA, Bottomley PA, **Edelstein WA**, Hart HR, Redington RW, Bilaniuk LT, Grossman RI, Goldberg HI, Bruno L, and Kressel H, "Proton Imaging and Phosphorus Spectroscopy in a Malignant Glioma." *American Journal of Neuroradiology*. 1985; **6** (1): 109-110.
40. Hardy CJ, **Edelstein WA** and Mueller OM, "Surface-Coil T1 Images." *Magnetic Resonance in Medicine* 1986; **3** (6): 935-940.
41. Hardy CJ and **Edelstein WA**, "Tailoring Broad-Band Inversion with Efficient Adiabatic Fast Passage." *Journal of Magnetic Resonance*. 1986; **69** (1): 196-199.
42. **Edelstein WA**, Glover GH, Hardy CJ, and Redington RW, "The Intrinsic Signal-to-Noise Ratio in NMR Imaging." *Magnetic Resonance in Medicine* 1986; **3** (4): 604-618.
43. **Edelstein WA**, Hardy CJ and Mueller OM, "Electronic Decoupling of Surface-Coil Receivers for NMR Imaging and Spectroscopy." *Journal of Magnetic Resonance*. 1986; **67** (1): 156-161.
44. Hardy CJ, **Edelstein WA** and Vatis D, "Efficient Adiabatic Fast Passage for NMR Population-Inversion in the Presence of Radiofrequency Field Inhomogeneity and Frequency Offsets." *Journal of Magnetic Resonance*. 1986; **66** (3): 470-482.
45. Mueller OM and **Edelstein WA**, "Low-noise preamplifier design for NMR." *RF Design*. 1987; **10** 39-41.
46. Bottomley PA, Charles HC, Roemer PB, Flamig D, Engeseth H, **Edelstein WA**, and Mueller OM, "Human In vivo Phosphate Metabolite Imaging with P-31 NMR." *Magnetic Resonance in Medicine* 1988; **7** (3): 319-336.
47. Roemer PB, **Edelstein WA**, Hayes CE, Souza SP, and Mueller OM, "The NMR Phased-Array." *Magnetic Resonance in Medicine* 1990; **16** (2): 192-225.
48. Tutunjian PN, Vinegar HJ and **Edelstein WA**, "Automated Core Analysis by H-1-NMR Spectroscopy." *Magnetic Resonance Imaging*. 1991; **9** (5): 859-864.
49. **Edelstein WA**, "Oil Core NMR Imaging Spectroscopy Instrumentation." *Magnetic Resonance Imaging*. 1991; **9** (5): 865-867.
50. **Edelstein WA** and Schulson EM, "NMR Imaging of Salt-Water Ice." *Journal of Glaciology*. 1991; **37** (125): 177-180.
51. Fuks LF, Huang FSC, Carter CM, **Edelstein WA**, and Roemer PB, "Susceptibility, Lineshape, and Shimming in High-Resolution NMR." *Journal of Magnetic Resonance*. 1992; **100** (2): 229-242.
52. Chung KY, **Edelstein WA** and Belfort G, "Dean Vortices with Wall Flux in a Curved Channel Membrane System.6. 2-Dimensional Magnetic-Resonance-Imaging of the Velocity-Field in a Curved Impermeable Slit." *Journal of Membrane Science*. 1993; **81** (1-2): 151-162.
53. Chung KY, Belfort G, **Edelstein WA**, and Li XM, "Dean Vortices in Curved Tube Flow 5. 3-D MRI and Numerical- Analysis of the Velocity-Field." *AIChE Journal*. 1993; **39** (10): 1592-1602.
54. **Edelstein WA**, Iben IET, Mueller OM, Uzgiris EE, Philipp HR, and Roemer PB, "Radiofrequency Ground Heating for Soil Remediation - Science and Engineering." *Environmental Progress*. 1994; **13** (4): 247-252.
55. Uzgiris EE, **Edelstein WA**, Philipp HR, and Iben IET, "Complex Thermal-Desorption of Pcb's from Soil." *Chemosphere*. 1995; **30** (2): 377-387.
56. Iben IET, **Edelstein WA**, Sheldon RB, Shapiro AP, Uzgiris EE, Scatena CR, Blaha SR, Silverstein WB, Brown GR, Stegemeier GL, and Vinegar HJ, "Thermal blanket for in-situ remediation of surficial contamination: A pilot test." *Environmental Science & Technology*. 1996; **30** (11): 3144-3154.
57. Sorgenfrei BL and **Edelstein WA**, "Optimizing MRI signal-to-noise ratio for quadrature unmatched RF coils: Two preamplifiers are better than one." *Magnetic Resonance in Medicine* 1996; **36** (1): 104-110.

58. Hedeem RA and **Edelstein WA**, "Characterization and prediction of gradient acoustic noise in MR imagers." *Magnetic Resonance in Medicine* 1997; **37** (1): 7-10.
59. Mallubhotla H, Belfort G, **Edelstein WA**, and Early TA, "Dean vortex stability using magnetic resonance flow imaging and numerical analysis." *AIChE Journal*. 2001; **47** (5): 1126-1140.
60. **Edelstein WA**, Hedeem RA, Mallozzi RP, El-Hamamsy S-A, Ackermann RA, and Havens TJ, "Making MRI Quieter." *Magnetic Resonance Imaging*. 2002; **20** (2): 155-163.
61. **Edelstein WA**, Kidane TK, Taracila V, Baig TN, Eagan TP, Cheng Y-CN, Brown RW, and Mallick JA, "Active-Passive Gradient Shielding for MRI Acoustic Noise Reduction." *Magnetic Resonance in Medicine* 2005; **53** 1013-1017.
62. Taracila V, **Edelstein WA**, Kidane TK, Eagan TP, Baig TN, and Brown RW, "Analytical Calculation of Cylindrical Shell Modes: Implications for MRI Acoustic Noise." *Concepts in Magnetic Resonance B: Magnetic Resonance Engineering*. 2005; 25B 60-64.
63. Cheng H, Zhao Q, Duensing GR, **Edelstein WA**, Spencer D, Browne N, Saylor C, and Limkeman M, "SmartPhantom--an fMRI simulator." *Magnetic Resonance Imaging*. 2006; 24 301-313.
64. Kidane TK, **Edelstein WA**, Eagan TP, Taracila V, Baig TN, Cheng Y-C N, Brown RW, "Active-Passive Shielding for MRI Acoustic Noise Reduction: Network Analysis," *IEEE Trans. Magnetics*, 2006; **42**(12) 3854-3860.
65. Baig TN, Eagan TP, Petropoulos LS, Kidane TK, **Edelstein WA**, and Brown RW, "Gradient coil with active endcap shielding," *Concepts in Magnetic Resonance Part B-Magnetic Resonance Engineering*, 2007; **31B**(1) 12-23.

#### **Book Chapters and Conference Proceedings**

1. Drever R, Hough J, **Edelstein WA**, Pugh JR, and Martin W. "On gravitational radiation detectors using optical sensing techniques," pp 365-369 in *International Meeting on Experimental Gravitation*, Pavia, Italy, Accademia Nazionale Dei Lincei, 1977.
2. Drever RWP, Hough J, Pugh JR, **Edelstein WA**, Ward H, Ford GM, and Robertson NA, "Gravitational-Wave Detectors," *Proceedings of the Royal Society of London Series a- Mathematical Physical and Engineering Sciences*. 1979; **368**(1732): 11-13.
3. Mallard J, Hutchison JMS, **Edelstein WA**, Ling CR, Foster MA, and Johnson G, "Invivo NMR Imaging in Medicine - the Aberdeen approach, both physical and biological," *Philosophical Transactions of the Royal Society of London Series B-Biological Sciences*. 1980; **289**(1037): 519ff
4. Mallard JR, Hutchison JMS, Foster MA, **Edelstein WA**, Ling CR, Smith FW, Reid A, Selbie R, Johnson G, and Redpath TW. "Medical imaging by nuclear magnetic resonance: a review of the Aberdeen physical and biological programme," pp 117-144 in *Medical Radionuclide Imaging*, Vienna, Austria, 1981.
5. Bottomley PA and Edelstein WA. "Magnetic field exposure in clinical nuclear magnetic resonance imaging," pp 412-414 in *XVth International Congress of Radiology*, Brussels, Belgium, Interimages, 1981.
6. **Edelstein WA**, Bottomley WA, Hart HR, Leue WM, Schenck JF, and Redington RW, "NMR imaging at 5.1 MHz", Proc. of an International Sym. on NMR imaging, Witcofski RL, Karstaedt N, Partain CL, eds. (Bowman Gray School of Medicine, Wake Forest Univ., Winston-Salem) 1982; pp 139-145.
7. Smith LS, Bottomley PA, **Edelstein WA**, Hart HR, Redington RW, and Schenck JF, "NMR imaging techniques and applications," in *Physics of Nuclear Medicine: Recent Advances*, V.R. Dandamudi, C. Ramesh, and M.C. Graham, Editors. 1984, American Institute of Physics: New York, NY.
8. Alavi A, Chawluk LJ, Zimmerman RA, Dann RW, Alavi J, **Edelstein WA**, Bottomley PA, Redington RW, and Reivich M, "Correlative studies of the brain with positron emission tomography (PET), nuclear magnetic resonance (NMR), and X-ray computed tomography (XCT)." in *Cerebral Blood Flow and Metabolism Measurement*, A. Hartman and S. Hoyer, Editors. 1985, Springer-Verlag: Heidelberg, Germany. p. 523-539.

9. Hayes CE, **Edelstein WA**, and Schenck JF, "Radio Frequency Coils," in *NMR in Medicine: The Instrumentation and Clinical Applications, Medical Physics Monograph 14*, S.R. Thomas and R.L. Dixon, Editors. 1985, American Institute of Physics: New York. p. 142-165..
10. **Edelstein WA**, Vinegar HJ, N. TP, Roemer PB, and Mueller OM. "NMR imaging for core analysis," pp 101-112, Paper 18272 in *63rd Annual Technical Conference of the Society of Petroleum Engineers*, Houston, TX, Society of Petroleum Engineers, 1988.
11. **Edelstein WA**. "Radiofrequency systems and coils for MRI and MRS," in *Encyclopedia of Nuclear Magnetic Resonance*, DM Grant and RK Harris, eds, vol. 6, pp 3950-3955 (1996).
12. Roemer PB, **Edelstein WA** and Hayes CE. "Whole Body Machines: NMR Phased Array Coil Systems," in *Encyclopedia of Nuclear Magnetic Resonance*, DM Grant and RK Harris, eds, vol. 8, pp 4983-4989 (1996).
13. **Edelstein WA**. "Principals and Modeling of Radiofrequency Coil Signal Detection and Image Production." International Society of Magnetic Resonance in Medicine, Saturday, May 6, 2006, Session on RF Systems Engineering, Paper 2, 9 pages.
14. **Edelstein WA**, "An American physicist in Aberdeen: good enough engineering," in *MRI25*, P. Antell, R. Jobson, and D. Woods, Editors. 2006, Faircount Ltd.: London. p. 56-65.

### Editorials

1. **Edelstein WA**, Bottomley PA, "Magnetic resonance without nuclei?" *Radiol.* **152**, 237-238 (1984): Also published as Bottomley PA, **Edelstein WA**, *Am. J. Roentgen* **143**, 197-198 (1984); *Am. J. Neuroradiol.* (1984).

### Invited Lectures

1. **Edelstein WA**, "NMR imaging." Hospital Physicists Association, Conference on Physical Aspects of Medical Imaging, Medical School, University of Manchester, Manchester, England, June 25, 1980.
2. **Edelstein WA**, "Medical imaging by nuclear magnetic resonance." Bioengineering Seminars, Interdisciplinary Studies, College of Engineering, University of California, Berkeley. April 28, 1981.
3. **Edelstein WA**, "Principles of NMR imaging." Second Annual Workshop on NMR Imaging, University of Texas Medical School, Houston, TX, March 4, 1982.
4. **Edelstein WA**, Bottomley PA, Leue WM, Hart HR, Schenck JF and Redington RW. "Whole body NMR imaging at 5.1 MHz." International Symposium and Course on Computed Tomography, April, 1982, New Orleans, LA.
5. **Edelstein WA**. "NMR imaging in medicine." Physics Colloquium, Williams College, April, 1982.
6. **Edelstein WA**. "The physical principles of NMR imaging." New York Hospital, Cornell Medical Center, meeting held at NY Hyatt, May 25, 1982.
7. **Edelstein WA**, P. A. Bottomley, H. R. Hart, W. M. Leue, L. S. Smith, J. F. Schenck and R. W. Redington. "Signal, Noise and Contrast in NMR Imaging." Annual Meeting, Society of Magnetic Resonance in Medicine, Boston, MA, August, 1982.
8. **Edelstein WA**. "Physical principles of NMR imaging." "Refresher Course", 1982 Annual Meeting of the Radiological Society of North America, November, 1982, Chicago, IL.
9. **Edelstein WA**, P. A. Bottomley, H. R. Hart and L. S. Smith. "Signal, noise and contrast in NMR imaging." Society of Magnetic Resonance Imaging Conference, Colorado Springs, CO, February, 1983.
10. Bottomley PA, Hart HR, **Edelstein WA**, Schenck JF, Smith LS, Mueller O, Vatis D, and Redington RW, 1983, "Head imaging and spectroscopy at 1.5 Tesla", First Annual Meeting Soc. for NMR Imaging, Colorado Springs, Feb. 14-18, 1983.
11. **Edelstein WA**. "NMR imaging and spectroscopy of the whole human body." and "On being an industrial scientist." New York University, Physics Department Seminars, APS visiting industrial scientist program.

12. **Edelstein WA.** "The application of nuclear magnetic resonance to imaging and spectroscopy in the human subject." Department of Bioengineering, University of Pennsylvania, Philadelphia, PA, October 6, 1983.
13. **Edelstein WA.** "The application of nuclear magnetic resonance to imaging and spectroscopy in the human subject." Distinguished Lecture Series, Shell Development Laboratories, Houston, TX, October, 1983.
14. **Edelstein WA.** "The application of nuclear magnetic resonance to imaging and spectroscopy in the human subject." Physics Department Colloquium, Columbia University, New York, NY, November 4, 1983.
15. **Edelstein WA.** "Physics aspects of NMR imaging system performance." Refresher Course, Radiological Society of North America. November, 1983 annual meeting, Chicago, IL.
16. **Edelstein WA.** "The application of nuclear magnetic resonance to imaging and spectroscopy in the human subject." Physics Department Colloquium, Rensselaer Polytechnic Institute, Troy, NY, January 25, 1984.
17. **Edelstein WA.** "The application of nuclear magnetic resonance to imaging and spectroscopy in the human subject." Physics Department Colloquium, Harvard University, Cambridge, MA, February 13, 1984.
18. **Edelstein WA.** "Signal and noise considerations in NMR imaging and spectroscopy." Soc. Mag. Res. in Medicine, Third annual meeting, August, 1984, pp. 202-205.
19. **Edelstein WA.** "NMR Imaging and spectroscopy in humans." MIT National Magnet Laboratory, Cambridge, MA, February, 1985.
20. **Edelstein WA.** "NMR Imaging." New York State Section of the American Physical Society, Meeting on Physics of Medical Imaging, held at General Electric Research and Development Center, October 4-5, 1985.
21. **Edelstein WA.** "NMR imaging: physics and applications to medicine and technology." Physics Department Colloquium, Syracuse University, March 6, 1986.
22. **Edelstein WA.** "NMR imaging: physics and applications to medicine and technology." High energy physics seminar, Cornell University, Ithaca, NY. March 7, 1986.
23. **Edelstein WA.** "RF antennas and electronics for high field NMR imaging." 27th ENC Conference, Baltimore, MD, April, 1986.
24. **Edelstein WA.** "NMR imaging: physics and applications to medicine and technology." Plenary address, 168th meeting of the American Electrochemical Society, Boston, MA, May 5, 1986.
25. **Edelstein WA.** "NMR imaging: physics and applications to medicine and science." Physics colloquium, Case-Western Reserve University, Cleveland, OH. May 29, 1986.
26. Hart HR, Schenck JF and **Edelstein WA.** "Magnetic resonance imaging with surface coils." Second International Symposium on Magnetic Resonance Imaging, Garmisch, FRG. Jan 29-Feb 1.
27. **Edelstein WA.** "Non-biological applications of NMR imaging in industry." Proctor and Gamble Symposium, Cincinnati, OH. May 13, 1987.
28. **Edelstein WA.** "RF coils for medical NMR imaging and spectroscopy." Society of Magnetic Resonance in Medicine, Sixth Annual Conference, New York City, New York, August 1987. Abstracts p. 92.
29. **Edelstein WA.** "Oil core and medical NMR applications." Institute for Medicinal Chemistry, Cambridge University, UK, August, 1988.
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42. **Edelstein WA.** "Radiofrequency heating and thermal blanket heating for soil remediation." Batelle Pacific Northwest Laboratories, Richland, WA, September 27, 1994.
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44. **Edelstein WA.** "The problem with PCBs and related contaminants." American Physical Society Tutorial on Cleaning of the Environment, Annual American Physical Society Meeting, San Jose, CA, March 19, 1995.
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46. **Edelstein WA.** "MRI and Thermal Soil Remediation: Two Case Studies in the Application of Science to Technology". GE Corporate Research and Development, Mechanical Systems Laboratory, November 13, 1995.
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51. **Edelstein WA.** "Celebrating 25 Years of Innovation." Plenary Session, International Society of Magnetic Resonance in Medicine, Fifth Scientific Meeting, Abstract No. 2, Vancouver, BC, Canada, April 12-18, 1997.
52. **Edelstein WA,** "MRI Electromagnetics," NY State Section, American Physical Society, Fall, 1998 Meeting: *Advances and Applications in Magnetism*, Rensselaer Polytechnic Institute, Troy, NY, October 2-3, 1998.
53. **Edelstein WA,** "Magnetic Resonance Imaging: Applied Physics and Electromagnetics, " Physics Colloquium, University of Illinois at Urbana-Champaign, September 16, 1999.

54. **Edelstein WA**, "Magnetic Resonance Imaging: A Science and Technology Spectacular," Keynote Address at a Symposium in honor of Paul Lauterbur's 70<sup>th</sup> birthday, Beckman Institute, University of Illinois at Urbana-Champaign, September 17, 1999.
55. **Edelstein WA**, "Searching for ET: Steven Spielberg, Carl Sagan and Paul Horowitz," Union College Physics Colloquium, October 20, 2000.
56. **Edelstein WA**, "Magnetic Resonance Imaging: Applied Physics and Electromagnetics," Physics Colloquium, Rensselaer Polytechnic Institute, Troy, NY, February 14, 2001.
57. **Edelstein WA**, "From 0 to 8 Tesla in Five Minutes," International Society of Magnetic Resonance in Medicine Engineering Study Group, MRI Hardware Conference, Cleveland, OH, February 23, 2001.
58. **Edelstein WA**, "Magnetic Resonance Imaging: Applied Physics and Electromagnetics," Physics Colloquium, Glasgow University, Glasgow, UK, April 28, 2001.
59. **Edelstein WA**, "Magnetic Resonance Imaging: The Best Thing Since X-Rays," Fifth Annual Science Research Symposium, Salem High School, Salem, NY, May 31, 2001.
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63. **Edelstein WA**, "Does a Physics Education Prepare You to be a Physicist?" RPI Physics Club Seminar, April 15, 2003.
64. **Edelstein WA**, "MRI Acoustic Noise Reduction." ENC (Experimental NMR Conference) Annual Meeting, April, 2004, Asilomar, CA.
65. **Edelstein WA**, "MRI from Scotland to Schenectady," ENC Annual Meeting, April, 2004, Asilomar, CA.
66. **Edelstein WA**, "Making MRI Quiet." Physics Colloquium, Rensselaer Polytechnic Institute, Troy, NY. October 20, 2004.
67. **Edelstein WA**, "Using Mathematics to Make MRI Quiet, or Doing Math with Computers," Hudson-Mohawk Valley Area Math Teachers Conference, March, 2005, Shaker HS, Colonie, NY, AMTNYS.
68. **Edelstein WA**, "MRI from 400 gauss to 1.5 Tesla and Beyond," MRI25 Celebration, Aberdeen, Scotland, September 2, 2005.
69. **Edelstein WA**, "MRI from 400 gauss to 1.5 tesla and Beyond," Physics Colloquium, Union College, Schenectady, NY.
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71. **Edelstein WA**, "MRI from 400 gauss to 1.5 tesla and beyond," GE Healthcare, Aurora, OH, June 22, 2006.
72. **Edelstein WA**, "Really Quiet MRI," Philips Medical Systems, Latham, NY, January 31, 2007.
73. **Edelstein WA**, "Toward Really Quiet MRI," ISMRM Workshop on High Field MRI, Asilomar, CA, March 26, 2007.
74. **Edelstein, WA**, "MRI from 400 gauss to 1.5 tesla and beyond," Paul Lauterbur Memorial Symposium, Beckman Institute, University of Illinois at Urbana-Champaign, March 28, 2008.

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90. **Edelstein WA**, Iben IET, Mueller OM, Uzgiris EE, Philipp HR and Roemer PB. "Radiofrequency ground heating for soil remediation." 1993 Conference on Innovative Remedial Technologies, Sponsored by NY State Legislative Commission on Toxic Substances & Hazardous Wastes, NY State Center for Hazardous Waste Management, NYS Department of Environmental Conservation and EPA Northeast Hazardous Substances Research Center, Hosted by Rensselaer Polytechnic Institute, Albany, NY, October 12-14, 1993.
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96. Sheldon RB, Iben IET, **Edelstein WA**, Vinegar HJ, EP deRouffignac, FG Carl, JL Menotti, J Coles, JM Hirsch, "Field Demonstration of a full-scale in-situ thermal desorption system for the remediation of soil containing PCBs and other hydrocarbons," Hazwaste World Superfund XVII, October 15-17, 1996, Environmental Industry Association, Washington, DC, pp 405-413. (1996).
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100. **Edelstein WA**, Hedeem RA, Mallozzi RP, Hedeem RA, DE Dean, "Making MRI Quiet," International Society of Magnetic Resonance in Medicine, Ninth Scientific Meeting, Paper 0611, Glasgow, Scotland, April 22-27, 2001.
101. Boskamp EB, Mallozzi RP, Q Liu and **Edelstein WA**, "Gaining Space with an Embedded Rf Body Coil Shield," International Society of Magnetic Resonance in Medicine, Ninth Scientific Meeting, Paper 1122, Glasgow, Scotland, April 22-27, 2001
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103. Schenck JF, W Barber, M Albers, L Latour, L Shumaker and **Edelstein WA**, "Magnetic Forces and Torques on Local Gradient Coils: An Example Using a Head Gradient Coil," International Society of Magnetic Resonance in Medicine, Ninth Scientific Meeting, Paper 612, Glasgow, Scotland, April 22-27, 2001.
104. Lee RF, **Edelstein WA**, Bottomley PA, Sodickson D, Kenwood G, and Hardy CJ, "Lumped-Element Planar Strip Array (LPSA) for MRI at 1.5T" in ISMRM 10th Scientific Meeting. 2002. Honolulu, HI, USA: International Society for Magnetic Resonance in Medicine, p. 321.

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111. Cheng H, Zhao Q, Spencer D, Duensing GR, and **Edelstein WA**, "A fMRI Study of the SMARTPHANTOM" in ISMRM Twelfth Scientific Meeting. 2004. Kyoto, Japan: International Society for Magnetic Resonance in Medicine, p. 1041.
112. Kidane T, Baig TN, Petropoulos LS, Eagan TP, **Edelstein WA**, Taracila V, and Brown RW, "Another step toward making MRI quieter: Along a passive shielding path" in ISMRM 13th Scientific Meeting. 2005. Miami, FL, USA: International Society for Magnetic Resonance in Medicine, p. 606.
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2. **Edelstein WA** and Bottomley PA, "Method of three-dimensional NMR imaging using selective excitation." USA Patent 4,431,968, Feb. 14, 1984, General Electric.
3. **Edelstein WA** and Bottomley PA, "Use of phase alternated RF pulses to eliminate effects of spurious free induction decay caused by imperfect 180 degree RF pulses in NMR imaging." USA Patent 4,443,760, April 17, 1984, General Electric.
4. **Edelstein WA**, Hutchison JMS, Johnson G, Redpath TW, and Mallard JR, "Methods of Producing Information from Objects." USA Patent 4,451,788, September 11, 1984, British Technology Group.
5. **Edelstein WA** and Bottomley PA, "Method of NMR imaging which overcomes T2\* effects in an inhomogeneous magnetic field." USA Patent 4,471,306, September 11, 1984, General Electric.

6. Bottomley PA and **Edelstein WA**, "Method of Eliminating Effects of Spurious Free Induction Decay NMR Signal Caused by Imperfect 180 Degree RF Pulses." USA Patent 4,484,138, November 20, 1984, General Electric.
7. **Edelstein WA**, Hutchison JMS, Johnson G, Redpath TW, and Mallard JR, "Methods of Producing Information from Objects." USA Patent 4,506,222, March 19, 1985, British Technology Group.
8. Bottomley PA and **Edelstein WA**, "Method for performing two-dimensional and three-dimensional chemical shift imaging." USA Patent 4,506,223, March 19, 1985, General Electric.
9. Bottomley PA and **Edelstein WA**, "Imaging of the transverse relaxation time using multiple spin echo sequences." USA Patent 4,521,733, June 4, 1985, General Electric.
10. **Edelstein WA**, "Nuclear Magnetic Resonance imaging using pulse sequences combining selective excitation and driven free precession." USA Patent 4,532,474, July 30, 1985, General Electric.
11. **Edelstein WA**, Hutchison JMS, Johnson G, Redpath TW, and Mallard JR, "Methods of Producing Information from Objects." USA Patent 4,602,214, July 22, 1986, British Technology Group.
12. **Edelstein WA**, "Nuclear magnetic resonance imaging antenna subsystem having a plurality of non-orthogonal surface coils." USA Patent 4,613,820, October 28, 1986, General Electric.
13. **Edelstein WA**, Eisner DR, Redington RW, and Smith LS, "RF shielded room for NMR imaging system." USA Patent 4,613,820, General Electric.
14. Mueller OM and **Edelstein WA**, "Low-noise preamplifier (especially for nuclear magnetic resonance system)." USA Patent 4,631,495, December 23, 1986, General Electric.
15. Schenck JF, Hussain M and **Edelstein WA**, "Transverse gradient field coils for nuclear magnetic resonance imaging." USA Patent 4,646,024, February 24, 1987, General Electric.
16. Hodsoll RJ, Karr SG, Leue WM, Smith LS, Redington RW, Bottomley PA, and **Edelstein WA**, "Method of, and apparatus for, minimizing magnetic resonance imaging artifacts due to power line interference." USA Patent 4,667,159, May 19, 1987, General Electric.
17. O'Donnell M, Karr SG, Barber WD, Wang JM, and **Edelstein WA**, "Method for Homogenizing a Static Magnetic Field Over an Arbitrary Volume." USA Patent 4,680,551, July 14, 1987, General Electric.
18. Bottomley PA, **Edelstein WA**, Hart HR, Schenck JF, Redington RW, and Leue WM, "High-Field Nuclear Magnetic Resonance Imaging/Spectroscopy System." USA Patent 4,689,563, August 25, 1987, General Electric.
19. Hardy CJ and **Edelstein WA**, "NMR Magnetization Inversion by nonlinear adiabatic fast passage." USA Patent 4,695,799, September 22, 1987, General Electric.
20. **Edelstein WA**, Schenck J, Mueller O, and Hayes C, "Radio Frequency Field Coil for NMR." USA Patent 4,680,548, July 16, 1986, General Electric.
21. **Edelstein WA**, Hutchison JMS, Johnson G, Redpath TW, and Mallard JR, "Methods of Producing Information from Objects." USA Patent 4,706,025, November 10, 1987, British Technology Group.
22. Roemer PB and **Edelstein WA**, "Nuclear Magnetic Resonance (NMR) Imaging with Multiple Surface Coils." USA Patent 4,825,162, June 20, 1989, General Electric.
23. **Edelstein WA** and Schenck JF, "Current Streamline Method for Coil Construction." USA Patent 4,840,700, June 20, 1989, General Electric.
24. Roemer PB and **Edelstein WA**, "RF Shield for RF Coil Contained Within Gradient Coils of NMR Imaging Device." USA Patent 4,871,969, October 3, 1989, General Electric.
25. Roemer PB and **Edelstein WA**, "Double-Sided RF Shield for RF Coil Contained Within Gradient Coils of NMR Imaging Device." USA Patent 4,879,515, November 7, 1989, General Electric.
26. Bottomley PA, **Edelstein WA**, Mueller OM, and Roemer PB, "Method of, and Apparatus for, NMR Spectroscopic Metabolite Imaging and Quantification." USA Patent 4,881,032, November 14, 1989, General Electric.
27. Bottomley PA, Roemer PB and **Edelstein WA**, "Volume NMR Coil for Optimum Signal-to-Noise Ratio." USA Patent 4,885,539, December 5, 1989, General Electric.

28. Roemer PB, **Edelstein WA**, Hayes CE, and Eash MG, "Method for Providing Multiple Coaxial Cable Connections to a Radio-Frequency Antenna Without Baluns." USA Patent 4,887,039, December 12, 1989, General Electric.
29. Roemer PB and **Edelstein WA**, "Etched z-Axis Gradient Coils for NMR System." USA Patent 4,910,462, March 20, 1990, General Electric.
30. Mueller OM and **Edelstein WA**, "Cryogenically Cooled Radio Frequency Power Amplifier." USA Patent 5,010,304, May 21, 1991, General Electric.
31. Mueller OM, Roemer PB and **Edelstein WA**, "Gradient Current Speedup Circuit for High Speed NMR Imaging." USA Patent 5,017,871, August 17, 1993, General Electric.
32. **Edelstein WA**, Vinegar HJ, Mueller OM, and Hsu CF, "Balanced-line RF Electrode System for Use in RF Ground Heating to Recover Oil from Oil Shale." USA Patent 5,236,039, August 17, 1993, General Electric.
33. Iben IT, **Edelstein WA** and Mueller OM, "Radiofrequency Ground Heating System for Soil Remediation, Contaminant-Extraction System." USA Patent 5,484,985, January 16, 1996, General Electric.
34. Iben IT, **Edelstein WA**, Sheldon RB, Blaha SR, Silverstein WB, Scatena CR, and Brown GR, "Thermal Heating Blanket in-situ Thermal Desorption for Remediation of Hydrocarbon-Contaminated Soil." USA Patent 5,674,424, October 7, 1997, General Electric.
35. Pla FG, Hedeem RA, Dobberstein RJ, Ebben TG, Mansell ST, Kemakolam MO, Radziun MJ, Sue PL, and **Edelstein WA**, "Low Noise MR Scanner." USA Patent 5,793,210, August 11, 1998, General Electric.
36. Sheldon RB, **Edelstein WA** and Iben IT, "Thermal Desorption and Destruction of Dense Non-Aqueous Phase Liquid in Fractured Bedrock." USA Patent 5,931,600, August 3, 1999, General Electric.
37. Dumoulin CL, **Edelstein WA**, El-Hamamsy SA, Iben IT, and Watkins RD, "Method to Automatically Tune MRI RF Coils." USA Patent 6,054,858, April 25, 2000, General Electric.
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39. Dumoulin CL, Watkins RD, Iben IT, El-Hamamsy SA, and **Edelstein WA**, "Method to Automatically Tune MRI RF Coils." USA Patent 6,184,684, February 6, 2001, General Electric.
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41. Schenck JF, Watkins RD, **Edelstein WA**, El-Hamamsy SA, Boskamp EB, Giaquinto ROJ, and Mallick JA, "Radiofrequency Coil for Open Magnetic Resonance Imaging System." USA Patent 6,437,567, August 20, 2002, General Electric.
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43. **Edelstein WA**, Hedeem RA and Mantone A, "Filler Material for Magnet Resonant System Self-Shielded Gradient Coil Assemblies." USA Patent 6,441,614, August 27, 2002, General Electric.
44. Dumoulin CL, Jones PT, **Edelstein WA**, Assif B, Ben Hamo N, and Keren D, "Rotating Body Coil Apparatus for Interventional Magnetic Resonance Imaging." USA Patent 6,466,018, October 15, 2002, General Electric.
45. Boskamp EB, Mallozzi RP and **Edelstein WA**, "RF Shielding Method and Apparatus." USA Patent 6,498,947, December 4, 2002, General Electric.
46. Lee RF and **Edelstein WA**, "RF Detector Array for Magnetic Resonance Imaging." USA Patent 6,788,059, September 7, 2004, General Electric.
47. **Edelstein WA**, "Active Vibration Compensation for MRI Gradient Coil Support to Reduce Acoustic Noise in MRI Scanners." USA Patent 6,894,498, May 17, 2005, MRScience LLC, Schenectady, NY.
48. **Edelstein WA**, Kidane TK, Taracilla V, Baig TN, Eagan TP, and Brown RW, "Active-Passive Electromagnetic Shielding to Reduce MRI Acoustic Noise." USA Patent 7,141,974, November 28, 2006, MRScience LLC, Schenectady, NY.

49. Zhao Q, Duensing GR, Hu C, and **Edelstein WA**, "Phantom for Production of Controllable fMRI Signal." USA Patent 7,215,122, May 26, 2005, In Vivo, Gainesville, FL.

### Research Funding

*Internally-funded projects at General Electric Corporate R&D.* W. Edelstein initiated research projects for 21 years which were funded by the appropriate GE operating division (e.g. GE Medical Systems) or GE Corporate.

### Recent Examples (W Edelstein, PI)

**NMR Phased Array.** Develop and implement methods to simultaneously acquire image information from an array of MRI surface coils. 1986-1990, \$1.5 million.

**Soil Decontamination Using Thermal Desorption.** Investigate and optimize thermal methods of removing contaminants from soil. 1990-1995, \$4 million.

**Quiet MRI.** Investigate the sources and pathways for acoustic noise and devise noise abatement measures. 1996-2001, \$2.5 million.

## EDUCATIONAL ACTIVITIES

### Teaching

Dates	Institution/location	Description
1967-1974	Department of Physics, Harvard University, Cambridge, MA, USA	Teaching assistant in discussion sections and laboratories for first and second year physics courses
Sept. 1973- Jan. 1974	Department of Science, Curry College, Milton, MA, USA	Taught calculus and 1st year physics
April 1974- Sept. 1977	Department of Natural Philosophy, Glasgow University, Glasgow, Scotland, UK	Demonstrator in Physics Honours Laboratory (Lab instructor)

### Students mentored/supervised

Date	Name	Place	Description
1978-1980	Glyn Johnson	Department of Medical Physics, University of Aberdeen, Aberdeen, Scotland, UK	Supervised/supported Ph.D. thesis project
1978-1980	Thomas Redpath	Department of Medical Physics, University of Aberdeen, Aberdeen, Scotland, UK	Supervised/supported Ph.D. thesis project
1990-1992	Melissa Robinson	Chemical Engineering Dept., University of Wyoming, Laramie, Wyoming and GE Corporate R&D, Schenectady, NY, USA	Supervised/supported Ph.D. thesis project
1991-1993	K-Y Chung	Chemical Engineering, Rensselaer Polytechnic Institute, Troy, NY, USA and GE Corporate R&D, Schenectady, NY, USA	Supervised/supported Ph.D. thesis project
1992-1995	Birgit Sorgenfrei	MIT Electrical Engineering, Cambridge, MA, USA and GE Medical Systems, Waukesha, WI, USA	Supervised/supported MSc thesis project
1993-1994	Diane Wildey	Civil Engineering, Rensselaer Polytechnic Institute, Troy, NY, USA and GE Corporate R&D, Schenectady, NY, USA	Supervised/supported MSc thesis project
1994-1996	Hanuman Mallubhotla	Chemical Engineering, Rensselaer Polytechnic Institute, Troy, NY, USA and GE Corporate R&D, Schenectady, NY, USA	Supervised/supported Ph.D. thesis project

2002-2005	Tesfaye Kidane	Department of Physics, Case Western Reserve University, Cleveland, OH, USA	Supervised/supported Ph.D. thesis project
2002-2005	Victor Taracila	Department of Physics, Case Western Reserve University, Cleveland, OH, USA	Supervised/supported Ph.D. thesis project
2002-2005	Tanvir Baig	Department of Physics, Case Western Reserve University, Cleveland, OH, USA	Supervised/supported Ph.D. thesis project

### **Editorial Activities**

1991-present, *Magnetic Resonance Imaging*, Editorial Board

2001-present, *Magnetic Resonance Engineering*, Editorial Board

1980-present, Reviewer for *Magnetic Resonance in Medicine*, *Magnetic Resonance Imaging*, *Magnetic Resonance Engineering*, *Journal of Magnetic Resonance*, *Journal of Magnetic Resonance Imaging*, *IEEE Transactions on Magnetics*.

### **ORGANIZATIONAL ACTIVITIES**

#### **Professional Societies**

International Society of Magnetic Resonance in Medicine, Charter Member, 1980 to present

- Board of Trustees, 1989-92.
- Committee on Electronic Publication, 1996-1999
- ISMRM Engineering Study Group Executive Committee, 1999-200; 2005-2006.

American Physical Society, Member 1967-present.

- Executive Board, APS New York State Section; helped organize twice-yearly NY APS meetings, 1998-1990
- National APS Committee to determine APS Award for Undergraduate Research, 1993-1995
- National APS Executive committee to create APS Forum on Industrial and Applied Physics, 1995
- National APS Panel on Public Affairs, 2000-2003

#### **Advisory Committees, Review Groups**

NIH review panel, National Institute for Biomedical Imaging and Bioengineering, “Systems and Methods for Small Animal Imaging,” July, 2003

NIH review panel, National Institute for Biomedical Imaging and Bioengineering, “Special Emphasis Panel/Initial Review Group,” February, 2004

NIH review panel, National Institute for Biomedical Imaging and Bioengineering, NIH Roadmap RFA, “Innovation in Molecular Imaging Probes,” March, 2005