CURRICULUM VITAE

John Middleditch

18Mar13

Personal Details

Address	MPA-CMMS MS-B265,LANL, Los Alamos NM 87545
Telephone	505 667 7054 (7028 sec'y), 672 1016 (home), 412-1503 (cell)
e-mail	jon@lanl.gov

Education

1964-68	B. S. physics, honors, California Institute of Technology
1968-75	Ph. D. physics, University of California, Berkeley, 1976, Thesis advisors, Eugene Commins/Jerry Nelson
1977	Course in solid state physics, U. California, Berkeley,
1997	Audited ME-562 (graduate mechanics) UNM
2006	Topics in Modeling (Queue Theory) Simon Frasier U, BC, Canada

Positions

2011.08 - present	LANL Affiliate, CCS-3 (UCRS Retiree 2006.42-present)
1980.75 - 2011.08	Staff, LANL (NIS-2, C-3, CIC-19,3, CCS-3)
1976.83-80.75	Physicist P4, Lawrence Berkeley Laboratory
1975.92-76.83	Visiting Professor at the Asiago Astrophysical Observatory of the University of Padua, Italy

Research Interests	Rapid time variablity in astronomical sources pulsars: binary, X-ray, radio/optical ms, QPO/noisars, Galactic center, gamma-ray bursts, supernovae Image reconstruction techniques, deconvolution, MEM Computational techniques, algorithms
Professional Societies	American Astronomical Society
Experience with systems	Windows, LINUX, UNICOS, CTSS, LTSS, NOS
Experience with computers	QSC, FLASH, Turing, Yellowtail, PCs, MACs
FORTRAN Experience	since 1962, many large programs, FORTRAN77, FORTRAN90 Large (out of core) Fourier transform with 2 levels of memory (Cray-1, XMP, YMP, CDC 6400 6600 with 3 levels of memory (7600) Large (in core) Fourier transform (Cray M98)
Other Languages	CAL (lots), C, knowledge of C++ Spanish, Italian, some French
Other Experience	Multi-dimensional FFT's, Image processing/deconvolution Lots of data handling, pulse-counting electronics Optical and near-IR observing, frequently under adverse conditions Interfacing Statistical Crack Mechanics to PRONTO & DYNA3D – a finite element Lagrangian solid materials code, vectorized
Graphics Experience	wrote own graphics package, contour plotter Interfaced to CA-DISSPLA Interfaced to cgs & fonts
Future Development	Parallel Fourier/Fresnel search for drifting signals Fast, parallel search for trains of harmonics. FFT GUI?? On site full analysis platform? (Pending Keck time, etc.)

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Scientific Acomplishments

First to decode supernova and gamma-ray burst mechanisms
First (decent) argument against dark matter and dark energy
First accurate glitch prediction for any pulsar (PSR J0537-6910)
Discovery of a 2.14 ms optical pulsar in SN 1987A which precesses at ∼1,000 s & slows due to gravitational radiation
" the fastest young pulsar (62 Hz) in any supernova remnant (N157B)
" the first pulsar in a globular cluster with a negative pdot
" the first pulsar (3 ms) in a globular cluster (1821-24)
Simultaneous co-discovery of rapid QPO in the Galactic Bulge X-ray sources (in this case, Sco X-1)
SPARTAN-1 imaging analysis of Galactic Center
Discovery of a 50 ms young optical pulsar in the LMC (0540-69)
First inclination-independent measurement of an unresolved binary system (P_{Orb} ∼2500s, P∼7 s [4U1626-67]) outside of the solar system
First mass and spin sense measurements of a neutron star

Activities at LANL

2007-2013 Supraluminal Applications Group
2010 LIFE-4 Reactor code and PSUADE code migration & use
2008 Web support of CCS-3 and HPC File Structure Performance
2005-10 CMPC for CCS-3
2005-07 RAGE code test support & diagnostics
2004-05 W88 Certification Team
1998-12 ADC for CCS-3
1993-98 Large Data Sets Specialist
1993-94 Housecalls Program
1992-04 Modeling Support for AGEX Surety/HEVR Programs
1990-97 Coach/advisor for NM Technet Supercomputing Challenge
1988-99 FFT algorithm specialist, C-3, CIC-3
1988-97 Observational astronomer C-3
1984-88 Imaging specialist for SPARTAN 1
1982-88 Support astronomer, SPARTAN-1, URA, SSO-2
1980-88 Observational astronomer SSO-2

Selected Publications

J. Middleditch, 2012 "Pulsar-Driven Jets in Supernovae, Gamma-Ray Bursts, and the Universe" *Advances in Astronomy*, 27Dec2012, http://www.hindawi.com/journals/aa/2012/898907 (26 pages)

J. Singleton, P. Sengupta, J. Middleditch, T. L. Graves, M. R. Perez, H. Ardavan, & A. Ardavan, 2009 "A Maximum-Likelihood Analysis of Observational Data on Fluxes and Distances of Radio Pulsars: Evidence for Violation of the Inverse-Square Law" *Phys. Rev. Lett.*, submitted;arXiv:0912.350, submission lapsed, to be resubmitted with a much stronger case.

J. Middleditch, 2006 "Predicting the Starquakes in PSR J0537-6910", *The Astroph. J.*, **652**, 1531-1546

J. Middleditch, J. Kristian, W. Kunkel *et al.*, 2000 "Rapid Photometry of Supernova 1987A: A 2.14 ms Pulsar?", *New Astronomy*, **5**, 243-283

A. G. Lyne, A. Brinklow, J. Middleditch, D. C. Backer, & T. R. Clifton, 1987 "The discovery of a millisecond pulsar in the globular cluster M28", *Nature*, **313**, 659-661

J. Middleditch & C. R. Pennypacker, 1985 "Optical pulsations in the Large Magellanic Cloud Remnant 0540-69.3", *Nature*, **313**, 659-661.

J. Middleditch, K. O. Mason, J. E. Nelson,& N. E. White, 1981 "4U 1626-67 - A prograde spinning X-ray pulsar in a 2500 s binary system", *The Astrophysical Journal*, **244**, 1001-1021.

J. Middleditch, & J. Nelson, 1976 "Studies of optical pulsations from HZ Her/Her X-1: a determination of the mass of the neutron star", *The Astrophysical Journal*, **208**, 567-586.