

MICHAEL M. SHARA
CURATOR
DEPARTMENT OF ASTROPHYSICS
Phone: 212.769.5488 Fax: 212.769.5007 mshara@amnh.org

HIGHEST DEGREE EARNED

Ph.D.

AREA OF SPECIALIZATION

Novae, supernovae, observations and simulations of dense star clusters

EDUCATIONAL EXPERIENCE

Ph.D. in Astrophysics, Tel-Aviv University, 1973-1977

M.Sc. in Astronomy, University of Toronto, 1971-1973

B.Sc. in Physics, University of Toronto, 1968-1971

Mathematics, McGill University, 1966-1968

PREVIOUS EXPERIENCE IN DOCTORAL EDUCATION

FACULTY APPOINTMENTS

Adjunct Professor, Department of Astronomy, Columbia University, 1999-present

Visiting Professor, Department of Astronomy, Columbia University, 1993

Visiting Assistant Professor, Department of Physics, Arizona State University, 1980-1982

COURSES TAUGHT

Stellar Structure and Evolution, Graduate Course, Columbia University, January-May 2005

GRADUATE ADVISEES

Jackie Faherty, SUNY-Stony Brook 2005-2009

James D. Neill, Ph.D., Columbia University, 2001-2004

RESEARCH GRANT SUPPORT

FEDERAL SOURCES

Jet Propulsion Lab, "Mid-Infrared Spectroscopy of the Coldest Known Brown Dwarf 2MASS 0415-0935: Physical Diagnostics and Spectral Modeling" (co-PI with A. Burgasser), \$5,600, November 17, 2004 – July 30, 2007

Jet Propulsion Lab, "The Mid-Infrared Spectrophotometric Properties of a Complete Sample of the Nearest L Dwarfs" (Co-PI with K. Cruz), \$62,200, September 15, 2004 – July 31, 2007

Jet Propulsion Lab, "Imaging Exoplanets, Brown Dwarfs and Disks with Precision Coronagraphy" (co-PI with A. Digby), \$400,448, September 10, 2003 – September 9, 2006

- National Aeronautics and Space Administration, “CV Shells Seen by GALEX,” \$26,700, March 15, 2005 – March 14, 2006
- National Aeronautics and Space Administration, “Spitzer Fellowship: Old and Cold: Identifying and Characterizing the Coldest Stellar and Substellar Halo Subdwarfs” (Co-PI with A. Burgasser), \$95,658, October 1, 2004 – September 30, 2005
- National Science Foundation, “Development of a Precision Stellar Coronagraph for Imaging Exoplanets, Brown Dwarfs and Disks” (Co-PI with B. Oppenheimer), \$524,120, September 1, 2002 – August 31, 2006
- National Science Foundation, “NSF/AFOSR Astronomy: The Lyot Project: Optimized, Diffraction-Limited Coronagraphy” (Co-PI with B. Oppenheimer), \$304,726, September 15, 2003 – August 31, 2006
- Space Telescope Science Institute, “Pixel Microlensing of M87,” \$35,000, November 1, 2000 – September 30, 2004 (Supplement \$7, 373, October 1, 2001 – September 30, 2004)
- Space Telescope Science Institute, “Constraining the Age of the Oldest Stars from the White Dwarf Cooling Sequence in M4,” \$75,000, February 1, 2001 – January 31, 2005
- Space Telescope Science Institute, “The Deepest Far UV Imaging Survey of Globular Clusters: NGC 6752 and NGC 6397,” \$70,545, April 1, 2001 – March 31, 2004
- Space Telescope Science Institute, “Uncovering the CV population in M15: a deep, time-resolved, far-UV survey of the cluster core,” \$74,048, October 1, 2003 – March 31, 2006
- Space Telescope Science Institute, “A Deep Far-UV Search for the Interacting Binary Population in M80,” \$36,384, September 1, 2004 – August 31, 2006
- Space Telescope Science Institute, “The White Dwarf Cooling Age and Dynamical History of the Metal-Poor Globular Cluster NGC 6397,” \$80,022, April 1, 2005 – March 31, 2007
- Space Telescope Science Institute, “Resolving a Binary System that Straddles the L/T Transition” (Co-PI with K. Cruz and A. Burgasser), \$10,432, July 1, 2004 – June 30, 2006

NON-FEDERAL SOURCES

- Hilary Lipsitz, Private Donor, Project: To support research on and building of a coronagraph, \$100,000, 2003-2005

RECENT ARTICLES IN REFEREED JOURNALS

- Kalirai, J., J. Anderson, H. Richer, I. King, J. Brewer, G. Carraro, S. Davis, G. Fahlman, B. Hansen, J. Hurley, S. Lepine, D. Reitzel, R. M. Rich, M. Shara, and P. Stetson. 2007. The space motion of the nearby globular cluster NGC 6397. *Astrophysical Journal Letters* 657: L93-L96.
- Shara, M., C. Martin, M. Seibert, R. M. Rich, S. Salim, D. Reitzel, D. Schiminovich, C. Delyannis, A. Sarrazine, N. Brosch, S. Lepine, D. Zurek, O. De Marco, and G. Jacoby. 2007. An ancient Nova shell surrounds the dwarf Nova Z Camelopardalis. *Nature* 446: 159-162.
- Deetlefs M., K. Seddon and M. Shara. 2006. Neoteric optical media for refractive index determination of gems and minerals. *New Journal of Chemistry* 30: 317-326.

- Deetlefs M., K. Seddon and M. Shara. 2006. Predicting physical properties of ionic liquids. *Physical Chemistry Chemical Physics* 8: 642-649.
- Digby, A., S. Hinkley, B. Oppenheimer, A. Sivaramakrishnan, J. Lloyd, M. Perrin, L. Roberts, R. Soummer, D. Brenner, R. Makidon, M. Shara, J. Graham, P. Kalas, J. Kuhn, and L. Newburgh. 2006. The challenges of coronagraphic astrometry. *Astrophysical Journal* 650: 484-496.
- Downes, R., R. Webbink, M. Shara, H. Ritter, U. Kolb, and H. Duerbeck. 2006. A catalog and atlas of cataclysmic variables: The final edition. *Journal of Astronomical Data* 11: 2-10.
- Knigge, C., R. Gilliland, A. Dieball, D. Zurek, M. Shara and K. Long. 2006. A blue straggler binary with three progenitors in the core of a globular cluster?. *Astrophysical Journal* 641: 281-287.
- Richer, H., J. Anderson, J. Brewer, S. Davis, G. Fahlman, B. Hansen, J. Hurley, J. Kalirai, I. King, D. Reitzel, R. M. Rich, M. Shara, and P. Stetson. 2006. Probing the faintest stars in a globular star cluster with the Hubble Space Telescope. *Science* 313: 936-940.
- Shara, M. M. 2006. Tramp classical novae as tracers of intergalactic stars. *Astronomical Journal* 131: 2980-2985.
- Shara M. and J. Hurley. 2006. Dynamical effects dominate the evolution of cataclysmic variables in dense star clusters. *Astrophysical Journal* 646: 464-473.
- Wallace, D., D. R. Gies, A. Moffat, M. Shara and V. Niemela. 2005. Hubble Space Telescope imaging of the WR 38/WR 38a cluster. *Astronomical Journal* 130: 126-133.
- Thorstensen, J., S. Lepine and M. Shara. 2006. The unusual cataclysmic binary star RBS 0490 and the space density of cataclysmic variables. *Publications of the Astronomical Society of the Pacific* 118: 1238-1244.
- Almoznino, E., N. Brosch, M. Shara, D. Zurek. 2005. The Deepest Hubble Space Telescope far-ultraviolet Observations in the Large Magellanic Cloud *Monthly Notices of the Royal Astronomical Society* 357: 645-655.
- De Marco O., M. Shara, D. Zurek, J. Ouellette, T. Lanz, R. Saffer and J. Sepinsky. 2005. A spectroscopic analysis of blue stragglers, horizontal branch and turn-off stars in four globular clusters. *Astrophysical Journal* 632: 894-919.
- Dieball A., C. Knigge, D. Zurek, M. Shara, K. Long, P. Charles, D. Hannikainen and L. van Zyl. 2005. An ultracompact x-ray binary in the globular cluster M15 (NGC 7078). *Astrophysical Journal Letters* 634: L105-L108.
- Lépine, S. and M. Shara. 2005. A Catalog of Northern Stars with Annual Proper Motions Larger than 0.15" (LSPM-NORTH Catalog). *Astronomical Journal* 129: 1483-1522.
- Lepine, S., R. Rich and M. Shara. 2005. Discovery of a nearby halo white dwarf with proper motion $\mu = 2.55''/\text{Yr}$. *Astrophysical Journal Letters* 633: L121-L124.
- Neill, J. and M. Shara. 2005. A Possible High Nova Rate for Two Local Group Dwarf Galaxies: M32 and NGC 205. *Astronomical Journal* 129: 1873-1885.
- Neill, J.D., M. Shara, W.R. Oegerle. 2005. Tramp Novae between Galaxies in the Fornax Cluster: Tracers of Intracluster Light. *Astrophysical Journal* 618: 692-704.
- Shara, M., S. Hinkley*, and D. Zurek. 2005. Cataclysmic and close binaries in star clusters. V. Erupting dwarf novae, faint blue stars, x-ray sources and the classical

- nova in the core of M80. *Astrophysical Journal* 634: 1272-1285. (Sponsor: B. R. Oppenheimer).
- Shara, M., S. Hinkley*, and D. Zurek. 2005. Erupting cataclysmic variable stars in the nearest globular cluster, NGC 6397: Intermediate polars? *Astronomical Journal* 130: 1829-1833. (Sponsor: B. R. Oppenheimer).
- Hansen, B., H. Richer, G. Fahlman, P. Stetson, J. Brewer, T. Currie, B. Gibson, R. Ibata, R.M. Rich, M. Shara. 2004. Hubble Space Telescope Observations of the White Dwarf Cooling Sequence of M4. *Astrophysical Journal Supplement Series* 155: 551-576.
- Yaron, O., D. Prialnik, M. Shara, A. Kovetz. 2005. An Extended Grid of Nova Models. II. The Parameter Space of Nova Outbursts *Astrophysical Journal* 623: 398-410.
- Baltz, E., T. Lauer, D. Zurek, P. Gondolo, M. Shara, J. Silk, S. Zepf. 2004. Microlensing Candidates in M87 and the Virgo Cluster with the Hubble Space Telescope *Astrophysical Journal* 610: 691- 706.
- De Marco, O., T. Lanz, J.A. Ouellette, D. Zurek, M. Shara. 2004. First Evidence of Circumstellar Disks around Blue Straggler Stars. *Astrophysical Journal* 606: L151-154.
- Ferdman, R.D., J. Brewer, G. Fahlman, B. Gibson, B. Hansen, M. Huber, R. Ibata, J. Kalirai, J. Matthews, R. Rich, H. Richer, J. Rowe, M. Shara, P. Stetson. 2004. Searching for Variability in the Globular Cluster M4. *Astronomical Journal* 127, 380-393.
- Kalirai, J., H. Richer, B. Hansen, J. Brewer, G. Fahlman, B. Gibson, R. Ibata, M. Limongi, R. Rich, I. Saviane, M. Shara and P. Stetson. 2004. The Galactic Inner Halo: Searching for White Dwarfs and Measuring the Fundamental Galactic Constant , V_0/R_0 . *Astrophysical Journal* 601, 277-288.
- Lepine, S., M. Shara and R. Rich. 2004. The esdM6.5 Star LSR J0822+1700: a New UltraCool Extreme Subdwarf. *Astrophysical Journal Letters* 602, L125-L128.
- Moffat, A., V. Poitras, S. V. Marchenko, M. Shara, D. Zurek, E. Bergeron, E.A. 2004. Antokhina Hubble Space Telescope NICMOS Variability Study of Massive Stars in the Young Dense Galactic Starburst NGC 3603. *Astronomical Journal* 128: 2854-2861.
- Neill, J. and M. Shara. 2004. The Halpha Light Curves and Spatial Distribution of Novae in M81. *Astronomical Journal*, 127, 816-831.
- Richer, H.B., J. Brewer, G.G. Fahlman, J. Kalirai, P.B. Stetson, B.M. Hansen, R.M. Rich, R.A. Ibata, B.K. Gibson, M. Shara. 2004. Concerning the White Dwarf Cooling Age of M4: A Reply to De Marchi et al. on "A Different Interpretation of Recent Deep HST Observations". *Astronomical Journal* 127: 2904-2908.
- Richer, H.B., G.G. Fahlman, J. Brewer, S. Davis, J. Kalirai, P.B. Stetson, B.M. Hansen, R.M. Rich, R.A. Ibata, B.K. Gibson, M. Shara. 2004. Hubble Space Telescope Observations of the Main Sequence of M4. *Astronomical Journal* 127: 2771-2792.
- Shara, M., S. Hinkley, D.R. Zurek, C. Knigge, H.E. Bond. 2004. The Luminous Erupting Dwarf Nova CV 1 in the Dense Globular Cluster M15. *Astronomical Journal* 128: 2847- 2853.
- Shara, M., D. Zurek, E. Baltz, T. Lauer, J. Silk. 2004. An Erupting Classical Nova in a Globular Cluster of M87. *Astrophysical Journal Letters* 605, L117-L120.

- Hurley, J. R. and M. M. Shara. 2003. White Dwarf Sequences in Dense Star Clusters
Astrophysical Journal 589, 179-198.
- Hut, P., M. Shara, Aarseth, S.J., Klessen, R.S., J.C. Lombardi Jr., J. Makino, S.
McMillan, O. Pols, P.J. Teuben, R.F. Webbink. 2003. MODEST-I: Integrating
Stellar Evolution and Stellar Dynamics. *New Astronomy* 8, 337-370.
- Knigge, C., D.R. Zurek, M. M. Shara, K.S. Long and R.L. Gilliland. 2003. A Far
Ultraviolet Survey of 47 Tucanae. II. The Long-Period Cataclysmic Variable
AK09. *Astrophysical Journal* 599, 1320-1332.
- Lepine, S., M.M. Shara and R. M. Rich. 2003. New High Proper Motion Stars from the
Digitized Sky Survey. II. Northern Stars with $0.5 < \mu < 2.0'' \text{ yr}^{-1}$ at High Galactic
Latitudes. *Astronomical Journal* 126, 921-934.
- Lepine, S., M. M. Shara and R.M. Rich. 2003. LSR1610-0040: The First Early-Type L
Subdwarf. *Astrophysical Journal Letters* 591, L49-L52.
- Lepine, S., R.M. Rich and M. M. Shara. 2003. Spectroscopy of Low Galactic Latitude
Stars With Large Proper Motions New High Velocity Stars, New Nearby Stars,
and an Enhanced Classification Scheme For M Dwarfs. *Astronomical Journal*
125, 1598-1622.
- Lepine, S., M. M. Shara, and R.M. Rich. 2003. Discovery of an Ultra-Cool Subdwarf:
LSR1425+7102, First Star with Spectral Type sdM8.0 *Astrophysical Journal*
Letters 585, L69-L72.
- Salim, S. S., Lepine, R. M. Rich and M. Shara. 2003. LSR0602+3910 – Discovery of a
Bright, Nearby L-Type Brown Dwarf. *Astrophysical Journal Letters* 586, L149-
L152.
- Shara, M. M., S. Hinkley and D.R. Zurek. 2003. Erupting Dwarf Novae in the Large
Magellanic Cloud. *Astronomical Journal* 126, 2887-2896.
- Hansen, B., J. Brewer, G. Fahlman, B. Gibson, R. Ibata, J. Kalirai, M. Limongi, M. Rich,
H. Richer, I. Saviane, M. Shara and P. Stetson. 2002. The White Dwarf Cooling
Sequence of the Globular Cluster M4. *Astrophysical Journal Letters* 574, L155-
158.
- Hurley, Jarrod R. and Michael M. Shara. 2002. The Promiscuous Nature of Stars in
Clusters. *Astrophysical Journal* 570, 184-189.
- Hurley, Jarrod R. and Michael M. Shara. 2002. Free-Floating Planets: Not So Surprising.
Astrophysical Journal 565, 1251-1256.
- Knigge, C., D.R. Zurek, M. M. Shara and K.S. Long. 2002. A Far-Ultraviolet Survey of
47 Tucanae. I. Imaging. *Astrophysical Journal* 579, 752-759.
- Lepine, S., R.M. Rich, J. D. Neill, A. Caulet and M. M. Shara. 2002. Discovery of an
M8.5 Dwarf with Proper Motion $\mu = 2.38''/\text{year}$. *Astrophysical Journal Letters*
581, L47-L50.
- Lepine, S., M. M. Shara and R.M. Rich. 2002. New High Proper Motion Stars from the
Digitized Sky Survey. I. Northern Stars with $0.5 < \mu < 2.0 \text{ arcsec/yr}$ at Low
Galactic Latitudes. *Astronomical Journal* 124, 1190-1212.
- Lepine, Sebastien, Michael M. Shara, and R. Michael Rich. 2002. New Distant M Dwarf
Companions to Known Nearby Stars. *Astronomical Journal* 123, 3434-3441.
- Neill, James D., Michael Shara, Adeline Caulet and David Buckley. 2002. The First
Orbital Period of a Dwarf Nova in a Globular Cluster: V101 in M5. *Astronomical*
Journal 123, 3298-3304.

- Richer, H.B., J. Brewer, G. Fahlman, B. Gibson, B. Hansen, R. Ibata, J. Kalirai, M. Limongi, M. Rich, I. Saviane, M. Shara and P. Stetson. 2002. The Lower Main Sequence and Mass Function of the Globular Cluster Messier 4. *Astrophysical Journal Letters* 574, L151-154.
- Shara, Michael and Jarrod Hurley. 2002. Star Clusters as Type Ia Supernova Factories. *Astrophysical Journal* 571, 830-842.
- Downes, R., R. Webbink, M. Shara, H. Ritter, U. Kolb and H. Duerbeck. 2001. An Atlas and Catalog of Cataclysmic Binary Stars, The Living Edition. In *Publications of the Astronomical Society of the Pacific* 113, 764.
- Lepine, S., D. Wallace, M. Shara, A.F.J. Moffat and V.S. Niemela. 2001. Spatially Resolved STIS Spectra of WR+OB binaries with Colliding Winds. *Astronomical Journal* 122, 3407-3418 .
- Moffat, A.F.J., N. Manset, A. Villar-Sbaffi, L. Vincent and M. M. Shara. 2001. High Precision, Time-Resolved Linear Polarimetry of Two Bright Dwarf Novae. *Astronomical Journal* 115, 1541-1546.
- Rich, R. M., M. M. Shara and D. Zurek. 2001. New Photometry for the Intermediate age LMC Globular Cluster NGC 2121 and the Nature of the LMC Age Gap. *Astronomical Journal* 122, 842-848.