

MICHAEL M. SHARA
CURATOR AND PROFESSOR
DEPARTMENT OF ASTROPHYSICS

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 (2003-2008)

- 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 $0.5 < \mu < 2.0''$ 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.