

Kaspar von Braun

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Research Interests:

- detection/characterization of extrasolar planetary systems, variable stars, Galactic star clusters, observational techniques, interstellar extinction, astrobiology

Professional Preparation and Academic Appointments:

- Postdoctoral Scholar starting 1/2006, Michelson Science Center, Caltech
Research: Extrasolar Planet Transits around Late K and M Dwarfs; Warm Dust in the Habitable Zones around Solar-type Stars (supervisors: G. van Belle, D. Ciardi)
- Carnegie Fellow 2002 – 2005, Carnegie / Department of Terrestrial Magnetism
Research: Extrasolar Giant Planet Transits in Open Clusters (EXPLORE/OC) and in Galactic Fields (EXPLORE) (supervisor: S. Seager)
- NASA Astrobiology Institute Fellow, 2004, Carnegie/DTM
- NASA Associate & NSF Associate, 2003/4, Carnegie/DTM
- Ph. D. Astronomy & Astrophysics, July 2002, University of Michigan
Dissertation: Eclipsing Binaries in Globular Clusters (advisor: M. Mateo)
- M. Sc. Astronomy, May 1996, University of Michigan
- Graduate Student Research Assistant, 8/1994 – 7/2002, U of Michigan Astronomy
- Graduate Student Instructor, 1/1995 – 7/2002, U of Michigan Astronomy
- Vordiplom Physik 1993, Ludwig-Maximilians-Universität Munich, Germany
- Research Intern, Max Planck Institute for Extraterrestrial Physics, Spring 1993/94

Observing:

- Extensive observing experience: over 250 nights total at the following telescopes: MDM 1.3m & 2.4m, CTIO 0.9m & 4m, KPNO 4m, LCO 1m & 2.5m, Magellan 6.5m
- *UBVRIJHK* direct imaging, near-IR/optical/near-UV spectroscopy (single- & multi-slit, multi-fibers) at low and medium resolution.
- Engineering of Echelle CCD at MDM 1.3m including linearity measurements, bias / gain determination, dark current / read noise reduction, etc.
- All observations with the LCO 1m, CTIO 0.9m, MDM 1.3m, and MDM 2.4m were conducted without night assistants and thus include complete telescope operation, as well as unassisted problem-identification and troubleshooting.
- Training of collaborators in observing techniques at MDM and LCO Observatories.

Data Reduction / Analysis / Computing:

- High-precision absolute and relative stellar photometry in crowded fields.
- Management of very large datasets and databases (up to thousands of observational epochs per open/globular cluster with 30,000 to 60,000 stars per image per filter).
- Monitoring studies, low- and high-amplitude variability detection.
- Analysis and interpretation of time series and periodic signals, period determination & phasing of real-time data, classification of variable star type, planetary transit detection algorithms, elimination of false positives, light curve fitting.
- Establishment and optimization of entire photometry reduction pipeline for my dissertation and postdoctoral projects. This included pioneering a technique of differential dereddening of GC fields, the development of OC target selection process, performing quasi-real-time data reduction while observing to implement dynamic observing strategy, etc.

Synergistic Activities:

- Creation of database of astronomical images (“Observational Mishaps”) which suffer from problems commonly encountered during observing runs to assist astronomers in diagnosing and eliminating their image problems at the observatory itself
- Referee for the *Astronomical Journal*
- Extensive Teaching Experience: at U of Michigan, taught as teaching assistant and/or principal instructor *all* 100-level astronomy classes.
- Volunteer activities: public talk at George Mason University’s Retirement Center, multiple outreach presentations of various aspects of astronomy to Michigan middle and elementary schools, Image of the Month (illustration of current astronomical topics to Michigan schools), open houses at U of Michigan’s 16” telescope, planetarium shows and presentations in German to UM students.

Languages:

- German & English (native fluency), French (fluent), Spanish (basic)

Selected Seminars, Colloquia, Conferences, etc

- Member: American Astronomical Society, Astronomical Society of the Pacific, Deutsche Physikalische Gesellschaft
- Poster Presentations at AAS Conferences 1996, 1999, 2001, 2002; Gordon Conference 2003; AIP Conference 2003; Bioastronomy Conference 2004; Aspen Astrophysics Conference 2005
- Invited colloquium/seminar talks: Scripps Institution of Oceanography (7/05), US Naval Research Lab (3/05), CIW/DTM (11/04), OCIW (1/04), CTIO (3/01), Mt. Stromlo Obs. (12/00)
- Invited speaker at Bioastronomy Conference, Reykjavik, Iceland (7/04)
- Seminar talk at Planetary Transits workshop at CfA (1/04)
- Hawaii Astrobiology Winter School (1/05)
- Workshop “Mathematical Problems in Astronomical Imaging”, Institute for Pure and Applied Mathematics, UCLA (1/04)
- Seminar talk at Variable Stars workshop at Michigan State University (4/00)

Selected Proposals

- NOAO Survey Proposal 2002: “The EXPLORE Project: A Deep Search for Transiting Extrasolar Planets” (PI: G. Mallén-Ornelas)
- Hubble Space Telescope 2005: “Globular Clusters in the Direction of the Inner Galaxy”, Cycle 14 Program SNAP 10575 (27 snapshots; PI: M. Mateo)
- Australian Research Council Discovery Project 2005: “Other Worlds: A Deep Southern Survey for Variability and Transiting Planets Using the Ultra-Wide Field of SkyMapper”, DP0663544 (PI: P. Sackett – pending)

Journal Publications (reverse chronological order)

- Deep Impact: Observations from a Worldwide Earth-Based Campaign – Meech, K. J., et al. 2005, *Science*, 310, 265
- Searching for Planetary Transits in Galactic Open Clusters: EXPLORE/OC – **von Braun, K.**, Lee, B. L., Seager, S., Yee, H. K. C., Mallén-Ornelas, G., and Gladders, M. D., *PASP*, 117, 125
- A Search for Eclipsing Binaries in Galactic Globular Clusters – **von Braun, K.** 2003, *PASP*, 115, 272
- The Ia Supernova 1999aw: a Probable 1999aa-like Event in a Low-luminosity Host Galaxy – Strolger, L.-G., et al. 2002, *AJ*, 124, 2905
- Photometry Results for the Globular Clusters M10 and M12: Extinction Maps, Color-Magnitude Diagrams, and Variable Star Candidates – **von Braun, K.**, Mateo, M., Chiboucas, K., Athey, A., and Hurley-Keller, D. 2002, *AJ*, 124, 2067
- Variable Stars in the Field of the Globular Cluster NGC 3201 – **von Braun, K.**, and Mateo, M. 2002, *AJ*, 123, 279
- Multiwavelength Monitoring of the Narrow-Line Seyfert 1 Galaxy Arakelian 564. III. Optical Observations and the Optical—UV—X-ray Connection – Shemmer, O., et al, *ApJ*, 561, 162
- An Extinction Map and Color-Magnitude Diagram for the Globular Cluster NGC 3201 – **von Braun, K.**, and Mateo, M. 2001, *AJ*, 121, 1522
- Color-Color Relations for Red Giants in Star Clusters – **von Braun, K.**, Chiboucas, K., Minske, J. K., Salgado, J. F., and Worthey, G. 1998, *PASP*, 110, 810
- Tests of the Tully-Fisher Relation. II. Scatter Using Optical Rotation Curves – Raychaudhury, S., **von Braun, K.**, Bernstein, G. M., and Guhathakurta, P. 1997, *AJ*, 113, 2046

Conference Proceedings, Abstracts, & Other (reverse chronological order)

- The Astrobiology Primer – editors: Mix, L., Armstrong, J., **von Braun, K.**, Mandell, A., Mosier, A., Raymond, S., Stewart, F., and Zhaxybayeva, O. 2005
- EXPLORE/OC: Photometry Results for the Open Cluster NGC 2660 – **von Braun, K.**, Lee, B. L., Seager, S., Yee, H. K. C., Mallén-Ornelas, G., and Gladders, M. D. 2005, Aspen Astrophysics Conference
- First Results from the EXPLORE/OC Survey – **von Braun, K.**, Lee, B. L., Seager, S., Yee, H. K. C., Mallén-Ornelas, G., and Gladders, M. D. 2004, *Astrobiology*, 4, 302

- Die Zyklen am Himmel und die menschliche Zivilisation – von Braun, C.-F. & **von Braun, K.** 2004, Technik in Bayern, 6/2004, pp 8-9
- EXPLORE/OC: A Search for Planetary Transits in the Field of the Southern Open Cluster NGC 2660 – **von Braun, K.**, Lee, B. L., Mallén-Ornelas, G., Yee, H. K. C., Seager, S., and Gladders, M. D. 2004 AIP Conf Proceedings "The Search for Other Worlds", 713, 181 (astro-ph/0312217)
- EXPLORE/OC: A Search for Planetary Transits in the Field of the Southern Open Cluster NGC 6208 – Lee, B. L., **von Braun, K.**, Mallén-Ornelas, G., Yee, H. K. C., Seager, S., and Gladders, M. D. 2004; AIP Conf Proceedings "The Search for Other Worlds", 713, 177 (astro-ph/0312397)
- Possible Transiting Planet Candidates from the EXPLORE Project – Mallén-Ornelas, G., Seager, S., Yee, H. K. C., Gladders, M. D., Brown, T. M., **von Braun, K.**, Minniti, D., Ellison, S. L., and Mallén-Fullerton, G. M. 2003, BAAS, 201, 96.04
- The EXPLORE Project: A Deep Search for Transiting Extrasolar Planets at the KPNO and CTIO 4m Telescopes – Mallén-Ornelas, G., Seager, S., Yee, H. K. C., **von Braun, K.**, Brown, T. M., Gladders, M. D., Lee, B., Ellison, S. L., Eyer, L., Blake, C., and Mallén-Fullerton, G. 2003, BAAS, 201, 104.10
- Variable Stars in the Fields of the Globular Clusters M10 and M12 – **von Braun, K.**, Mateo, M., Chiboucas, K., Athey, A., and Hurley-Keller, D. 2002, BAAS, 199, 56.14
- NGC 3201 Photometry Results: Differential Extinction Map, Color-Magnitude Diagram, and Variable Star Candidates – **von Braun, K.**, and Mateo, M. 2001, BAAS, 198, 42.07
- Observational Mishaps: a Database – **von Braun, K.**, Chiboucas, K., and Hurley-Keller, D. 1999, BAAS, 194, 44.03
- Observational Mishaps: a Database – **von Braun, K.**, Chiboucas, K., and Hurley-Keller, D. 1999, I.A.P.P.P Communications No 75, 62 (astro-ph/9906195)
- Eclipsing Binary Stars in Globular Clusters – **von Braun, K.**, Mateo, M., and Yan, L. 1996, BAAS, 189, 71.12