

## CV – Dr. Kirk D. Borne

Professor of Astrophysics & Computational Science  
 School of Physics, Astronomy, & Computational Sciences  
 George Mason University, Fairfax, VA 22030  
 Phone: (703) 993-8402, E-mail: kborne@gmu.edu  
 WWW: <http://classweb.gmu.edu/kborne/>

### Professional Preparation

1975	B.S., Physics, Summa Cum Laude, Louisiana State University
1980	M.S., Astronomy, Caltech, Pasadena
1983	Ph.D., Astronomy, Caltech, Pasadena (Advisor: James E. Gunn)
1981-83	Postdoctoral Fellow, Astronomy, University of Michigan
1983-85	Carnegie Fellow, Dept. of Terrestrial Magnetism, CIW

### Appointments

2011–	Professor of Astrophysics and Computational Science, GMU
2003–2011	Associate Professor of Astrophysics and Computational Science, GMU
2002–2007	Adjunct Associate Professor, UMUC Graduate School, Database Systems Technologies Program
2005–2007	Program Manager, SSDOO (Space Science Data Operations Office) Project, QSS Group Inc., NASA/GSFC
1999	Sabbatical Visitor, STScI
1995–2002	Astrophysics Department Manager, Astrophysics Data Facility and Astronomical Data Center, Raytheon ITSS / Hughes STX, NASA/GSFC
1992–1995	ST-DADS Project Scientist, Hubble Space Telescope Science Institute
1985–1995	Scientist, Hubble Space Telescope Science Institute
1983–1985	Carnegie Fellow, DTM – Carnegie Institution of Washington
1981–1983	Teaching Fellow, Dept. of Astronomy, University of Michigan

### **Related Products**

1. Borne, K., “A Machine Learning Classification Broker for the LSST Transient Database,” *Astronomische Nachrichten*, 329, 255 (2008).
2. Borne, K., “Scientific Data Mining in Astronomy,” in *Next Generation Data Mining* (CRC Press: Taylor & Francis), pp. 91–114 (2009). [arXiv.org:0911.0505](https://arxiv.org/abs/0911.0505)
3. Das, K., Bhaduri, K., Arora, S., Griffin, W., Borne, K., Giannella, C., & Kargupta, H., “Scalable Distributed Change Detection from Astronomy Data Streams using Local, Asynchronous Eigen-Monitoring Algorithms,” peer-reviewed proceedings of SIAM Data Mining SDM09 (2009).
4. Borne, K., “Astroinformatics: Data-Oriented Astronomy Research and Education,” *Journal of Earth Science Informatics*, 3, 5 (2010).
5. Bhaduri, K., Das, K., Borne, K., Giannella, C., Mahule, T., & Kargupta, H., “Scalable, Asynchronous, Distributed Eigen-Monitoring of Astronomy Data Streams,” *Journal of Statistical Analysis and Data Mining*, 4(3), 336 (2011).

### Other Significant Products

1. Borne, K. D., “Distributed Data Mining in the National Virtual Observatory,” in SPIE Data Mining & Knowledge Discovery V, vol. 5098, p. 211 (2003).
2. Giannella, C., Dutta, H., Borne, K., Wolff, R., & Kargupta, H., “Distributed Data Mining for Astronomy Catalogs,” SIAM Scientific Data Mining (2006).
3. Borne, K., & Eastman, T., “Collaborative Knowledge-Sharing for E-Science,” AAAI Semantic Web for Collaborative Knowledge Acquisition (2006), available at <http://www.aaai.org/Papers/Symposia/Fall/2006/FS-06-06/FS06-06-017.pdf>
4. Dutta, H., Giannella, C., Borne, K., & Kargupta, H., “Distributed Top-K Outlier Detection from Astronomy Catalogs using the DEMAC System,” SIAM Scientific Data Mining (2007).
5. Olmedo, O., Zhang, J., Wechsler, H., Poland, A., & Borne, K., “Automatic Detection and Tracking of CMEs in Coronagraph Time Series,” Solar Physics, 248, 485 (2008).

### Synergistic Activities

- Senior Science Personnel, National Virtual Observatory Project
- Chairman, LSST Informatics and Statistics Science Collaboration Team
- Member, ISI Executive Committee for Astrostatistics
- Science Organizing Committee, Conference on Intelligent Data Understanding (2010, 2011)
- Science Organizing Committee, Statistical Challenges in Modern Astronomy (SCMA 2011)

### Collaborators and Co-Editors (last 4 years)

S.Arora (UMBC), T.Axelrod (LSSTC), J.Babu (PSU), A.C.Becker (U.Wash), J.Becla (SLAC), K.Bhaduri (UMBC), T.Borison (NOAO), K.Bowyer (UND), D.L.Burke (SLAC), D.Carr (GMU), A.Chang (MIT), C.Claver (NOAO), A.Connolly (U.Wash), K.Cook (LLNL), D.Darg (Oxford), K.Das (SGT Inc.), M.DeMaria (NOAA), G.Djorgovski (Caltech), H.Dutta (Columbia), T.Eastman (GSFC), E.Feigelson (PSU), T.Finin (UMBC), L.Fortson (Adler Planetarium and Univ. Minnesota), P.Fox (RPI), S.Fung (NASA), H.Ferguson (STScI), J.Gentle (GMU), C.Giannella (Mitre Corporation), D.K.Gilmore (SLAC), M.Graham (Caltech), A.Gray (Georgia Tech), E.Grayzeck (NASA), J.Green (NASA), W.Griffin (UMBC), L.Hall (U.South Florida), T.Hamilton (Shawnee St. U.), R.Hanisch (STScI), Z.Ivezic (U.Wash), S.Jacoby (LSSTC), R.L.Jones (U.Wash), A.Joshi (UMBC), M.Juric (IAS), S.M.Kahn (SLAC), H.Kargupta(UMBC), L.Kerschberg(GMU), K.-T.Lim (SLAC), J.Lin (GMU), C.Lintott(Oxford), Z.Liu (GMU), T.Loredo (Cornell), J.Lotz (NOAO), R.Lupton(Princeton), A.Mahabal(Caltech), T.Mahule(UMBC), T.Matheson(NOAO), T.McGlynn (NASA), R.McGuire (NASA) J.Miller (NASA), D.G.Monet (USNO-FS), T.Narock (NASA,UMBC), O.Olmedo (GMU), W.Pence (NASA), P.Pinto (U.Arizona), A.Poland (GMU), M.J.Raddick (JHU), S.Ridgway (NOAO), N.Samatova (NCSU/ORNL), A.Saha (NOAO), D.Sawyer (NASA), B.Sesar (U.Wash), R.Shaw (NOAO), E.Shaya (UMD), A.Smith (Oxford), C.W.Stubbs (CFA/Harvard), V.Sugumaran (Oakland U.), D.Sun (GMU), A.Szalay (JHU), J.A.Tyson (UCDavis), K.Wagstaff (JPL), J.Wallin (GMU), H.Wechsler (GMU), E.Wegman (GMU), R.Weigel (GMU), R.Williams (Caltech), R.Wolff (UMBC), R.Yang (GMU), J.Zhang (GMU), X.Zhu (UMBC)

### Graduate and Postdoctoral Advisors and Advisees

Graduate students: T. Boggs, R.Duffin, D.Ghoshal, C.Grieg, G.Jacobs, P.Nayak, A.Vedachalam; PhD advisor: J.Gunn (Princeton); Postdoctoral sponsors: D.Richstone (U.Michigan), V.Rubin (DTM-CIW)