

Dr. David A. Minton

Associate Professor

Purdue University • Department of Earth, Atmospheric, and Planetary Sciences
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Employment

- 2018–Present **Associate Professor with Tenure**, Purdue University, West Lafayette, IN.
2011–2018 **Assistant Professor**, Purdue University, West Lafayette, IN.
2009–2011 **Research Scientist**, Southwest Research Institute, Boulder, CO.

Education

- 2005–2009 **Ph.D. in Planetary Sciences**, The University of Arizona, Tucson, AZ.
Dissertation: *Dynamical History of the Asteroid Belt and Implications for Terrestrial Planet Bombardment*
Advisor: Renu Malhotra
2003–2005 University of Maryland, College Park, MD.
Research Project: *Magnetohydrodynamic control of incipient boundary layer separation in supersonic flow*
Advisors: Mark Lewis and David Van Wie
2001–2003 **B.S. in Aerospace Engineering - Summa Cum Laude**, North Carolina State University, Raleigh, NC.
1999–2000 **A.S. in College Transfer**, Central Piedmont Community College, Charlotte, NC.

Internships

- 2003 NASA Langley Aerospace Research Summer Scholar, Hampton, VA.

Refereed Publications

U=Undergraduate student

G=Graduate student

P=Postdoc

- [31] Ćuk, M., **Minton, D. A.**, Pouplin^G, J. L. L., Wishard^G, C. A., (2020). Evidence for a Past Martian Ring from the Orbital Inclination of Deimos. *ApJL*, In Press
[30] Riedel, C., **Minton, D.A.**, Michael, G., Orgel, C., van der Bogert, C.H., Hiesinger, H., (2020) Degradation of Small Simple and Large Complex Lunar Craters: Not a Simple Scale Dependence. *Journal of Geophysical Research: Planets*, 125, e2019JE006273.
[29] Richardson, J.E., Steckloff, J.K., **Minton, D.A.**, Impact-produced seismic shaking and regolith growth on asteroids 433 Eros, 2867 Šteins, and 25143 Itokawa. *Icarus*. In review.
[28] **Minton, D.A.**, Fassett, C.I., Hirabayashi^P, M., Howl^U, B.A., Richardson, J.E. (2019) The equilibrium size-frequency distribution of small craters reveals the effects of distal ejecta on lunar landscape morphology. *Icarus*, 326:63–87.
[27] Graves^G, K. J., **Minton, D.A.**, Molaro, J. L., & Hirabayashi, M. (2019). Resurfacing Asteroids from Thermally Induced Surface Degradation. *Icarus*, 322, 1–12
[26] Hesselbrock^G, A. J., & **Minton, D.A.** (2019). Three Dynamical Evolution Regimes for Coupled Ring-satellite Systems and Implications for the Formation of the Uranian Satellite Miranda. *The Astronomical Journal*, 157(1), 30.

- [25] Huang^G, Y.-H., **Minton, D.A.**, Zellner, N. E. B., Hirabayashi, M., Richardson, J. E., & Fassett, C. I. (2018). No Change in the Recent Lunar Impact Flux Required Based on Modeling of Impact Glass Spherule Age Distributions. *Geophysical Research Letters*, 45(14), 6805–6813.
- [24] Elliott^{U,G}, J. R., Huang^G, Y.-H., **Minton, D.A.**, & Freed, A. M. (2018). The length of lunar crater rays explained using secondary crater scaling. *Icarus*, 312, 231–246.
- [23] Hirabayashi^P, M., Howl^U, B. A., Fassett, C. I., Soderblom, J. M., **Minton, D.A.**, & Melosh, H. J. (2018). The Role of Breccia Lenses in Regolith Generation From the Formation of Small, Simple Craters: Application to the Apollo 15 Landing Site. *Journal of Geophysical Research: Planets*, 123(2), 527–543.
- [22] Graves^G, K. J., **Minton, D.A.**, Hirabayashi^P, M., DeMeo, F. E., & Carry, B. (2018). Resurfacing asteroids from YORP spin-up and failure. *Icarus*, 304, 162–171.
- [21] Huang^G, Y.-H., **Minton, D.A.**, Hirabayashi^P, M., Elliott^{U,G}, J. R., Richardson, J. E., Fassett, C. I., & Zellner, N. E. B. (2017). Heterogeneous impact transport on the Moon. *Journal of Geophysical Research: Planets*, 122(6), 1158–1180.
- [20] Fassett, C. I., Crowley, M. C., Leight, C., Dyar, M. D., **Minton, D.A.**, Hirabayashi^P, M., et al. (2017). Evidence for rapid topographic evolution and crater degradation on Mercury from simple crater morphometry. *Geophysical Research Letters*, 44(11), 5326–5335.
- [19] Hesselbrock^G, A. J., & **Minton, D.A.** (2017). An ongoing satellite–ring cycle of Mars and the origins of Phobos and Deimos. *Nature Geoscience*, 10(4), 266–269.
- [18] Hirabayashi^P, M., **Minton, D.A.**, & Fassett, C. I. (2017). An analytical model of crater count equilibrium. *Icarus*, 289, 134–143.
- [17] Johnson, B. C., Collins, G. S., **Minton, D.A.**, Bowling, T. J., Simonson, B. M., & Zuber, M. T. (2016). Spherule layers, crater scaling laws, and the population of ancient terrestrial impactors. *Icarus*, 271, 350–359.
- [16] Johnson, B. C., Walsh, K. J., **Minton, D.A.**, Krot, A. N., & Levison, H. F. (2016). Timing of the formation and migration of giant planets as constrained by CB chondrites. *Science Advances*, 2(12), e1601658–e1601658.
- [15] Johnson^G, B. C., **Minton, D.A.**, Melosh, H. J., & Zuber, M. T. (2015). Impact jetting as the origin of chondrules. *Nature*, 517(7), 339–341.
- [14] Morbidelli, A., Walsh, K. J., O'Brien, D. P., **Minton, D.A.**, & Bottke, W. F. (2015). The Dynamical Evolution of the Asteroid Belt. In *Asteroids IV* (pp. 493–507). University of Arizona Press. Tucson.
- [13] Steckloff^G, J. K., Johnson^G, B. C., Bowling^G, T., Melosh, H. J., Minton, D., Lisse, C. M., & Battams, K. (2015). Dynamic sublimation pressure and the catastrophic breakup of Comet ISON. *Icarus*, 258, 430–437.
- [12] **Minton, D.A.**, Richardson, J. E., & Fassett, C. I. (2015). Re-examining the main asteroid belt as the primary source of ancient lunar craters. *Icarus*, 247(0), 172–190.
- [11] Johnson^G, B. C., **Minton, D.A.**, Melosh, H. J., & Zuber, M. T. (2015). Impact jetting as the origin of chondrules. *Nature*, 517(7), 339–341.
- [10] **Minton, D.A.**, & Levison, H. F. (2014). Planetesimal-driven migration of terrestrial planet embryos. *Icarus*, 232(0), 118–132.

- [9] Fassett, C. I., & **Minton, D.A.** (2013). Impact bombardment of the terrestrial planets and the early history of the Solar System. *Nature Geoscience*, 6(7), 520–524.
- [8] Yue, Z., Johnson, B. C., **Minton, D.A.**, Melosh, H. J., Di, K., Hu, W., & Liu, Y. (2013). Projectile remnants in central peaks of lunar impact craters. *Nature Geoscience*, 6(6), 435–437.
- [7] Bottke, W. F., Vokrouhlický, D., **Minton, D.**, Nesvorný, D., Morbidelli, A., Brasser, R., et al. (2012). An Archaean heavy bombardment from a destabilized extension of the asteroid belt. *Nature*, 485(7396), 78–81.
- [6] **Minton, D.A.**, & Malhotra, R. (2011). Secular Resonance Sweeping of the Main Asteroid Belt During Planet Migration. *The Astrophysical Journal*, 732(1), 53–64.
- [5] **Minton, D.A.**, & Malhotra, R. (2010). Dynamical erosion of the asteroid belt and implications for large impacts in the inner Solar System. *Icarus*, 207(2), 744–757.
- [4] **Minton, D.A.**, & Malhotra, R. (2009). A record of planet migration in the main asteroid belt. *Nature*, 457(7233), 1109–1111.
- [3] Malhotra, R., & **Minton, D.A.** (2008). Prospects for the Habitability of OGLE-2006-BLG-109L. *The Astrophysical Journal Letters*, 683(1), L67–L70.
- [2] **Minton, D.A.** (2008). The topographic limits of gravitationally bound, rotating sand piles. *Icarus*, 195(2), 698–704.
- [1] **Minton, D. A.**, & Malhotra, R. (2007). Assessing the Massive Young Sun Hypothesis to Solve the Warm Young Earth Puzzle. *The Astrophysical Journal*, 660(2), 1700–1706.