

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

- [32] Safrit, T.K., Steckloff, J.K., Bosh, A.S., Nesvorny, D., Walsh, K., Brassier, R., **Minton, D.A.**, (2021). The Formation of Bilobate Comet Shapes through Sublimative Torques. *Planet. Sci. J.* 2, 14.
- [31] Čuk, 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*, 896, L28.
- [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.**, (2020) Impact-produced seismic shaking and regolith growth on asteroids 433 Eros, 2867 Šteins, and 25143 Itokawa. *Icarus*. 347, 113811.
- [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.