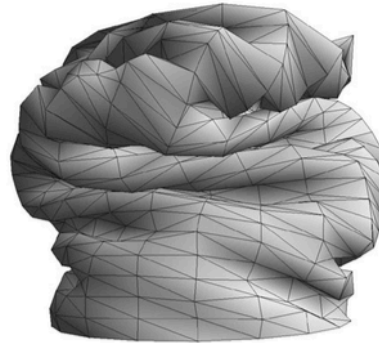




**Professor Eitan Grinspun**



**Figure 4: *The collision algorithm must handle difficult buckling situations.***

From: Eitan Grinspun, Fehmi Cirak, Peter Schröder and Michael Ortiz, “Non-linear mechanics and collisions for subdivision surfaces”, Caltech Report (Date and number not given in the pdf file. The most recent reference is dated 2000. See also the paper: F. Cirak, M. Ortiz, and P. Schröder, “Subdivision surfaces: A new paradigm for thin-shell finite-element analysis”, *Internat. J. Numer. Methods Engrg.*, 47(12):2039–2072, 2000

See:

<http://engineering.columbia.edu/web/faculty/content/eitan-grinspun>

<http://www.cs.columbia.edu/~eitan/>

<http://datascience.columbia.edu/eitan-grinspun>

[https://scholar.google.com/citations?user=0\\_vvBZkAAAAJ&hl=en](https://scholar.google.com/citations?user=0_vvBZkAAAAJ&hl=en)

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### **Career:**

Eitan Grinspun is associate professor of computer science at Columbia Engineering, and director of the Columbia Computer Graphics Group. He is an Alfred P. Sloan Research Fellow and NSF CAREER Award recipient, and was previously an NVIDIA Fellow and a Caltech Everhart Distinguished Lecturer. The technologies developed by his laboratory are licensed and/or used today in Adobe Photoshop and Illustrator, at major film studios, including Disney, Pixar, LucasFilm, and Weta Digital, in medical research at several universities, and in physics research at institutions like MIT, Université Paris VI, University of Toronto, etc. His work has been profiled in major media outlets, including *Scientific American* and *The New York Times*. Grinspun was Professeur d'Université Invité in Paris at l'Université Pierre et Marie Curie in 2009, a research scientist at the Courant Institute of Mathematical Sciences from 2003 to 2004, and received his Ph.D. from the California Institute of Technology in 2003.

### **Education:**

B.A., Toronto (Ontario), 1997; M.S., California Institute of Technology, 2000; Ph.D., 2003

## Research Interests:

Computer graphics and scientific computing, computational mechanics, mathematical foundations of graphics, discrete differential geometry, computer science

## Selected Publications:

1. Eitan Grinspun, Fehmi Cirak, Peter Schröder and Michael Ortiz, “Non-linear mechanics and collisions for subdivision surfaces”, Caltech Report (Date and number not given in the pdf file. The most recent reference is dated 2000. See also the paper: F. Cirak, M. Ortiz, and P. Schröder, “Subdivision surfaces: A new paradigm for thin-shell finite-element analysis”, *Internat. J. Numer. Methods Engrg.*, 47(12):2039–2072, 2000
2. Eitan Grinspun, “The basis refinement method”, Ph.D. dissertation, Computer Science, California Institute of Technology, 2003
3. Petr Krysl, Eitan Grinspun and Peter Schröder, “Natural hierarchical refinement for finite element methods”, *International Journal for Numerical Methods in Engineering*, Vol. 56, No. 8, pp 1109-1124, 2003
4. Jeff Bolz, Ian Farmer, Eitan Grinspun and Peter Schröder, “Sparse matrix solvers on the GPU: conjugate gradients and multigrid”, *SIGGRAPH '03, ACM Transactions on Graphics (TOG)*, Vol. 22, No. 3, pp 917-924, July 2003
5. Eitan Grinspun, Anil N. Hirani, Mathieu Desbrun and Peter Schröder (Caltech), “Discrete shells”, *Eurographics/SIGGRAPH Symposium on Computer Animation*, edited by D. Breen and M. Lin, 2003
6. Yotam Gingold, Adrian Secord, Jefferson Y. Han, Eitan Grinspun and Denis Zorin, “A discrete model for inelastic deformation of thin shells”, (publisher not given in the pdf file), August 2004
7. Eitan Grinspun (Columbia University), “A discrete model of thin shells”, *Proceeding SIGGRAPH '05 ACM SIGGRAPH 2005 Courses*, Article No. 4, 2005
8. Rob Burgoon, Zoe J. Wood and Eitan Grinspun, “Discrete shells origami”, *Proceedings of the 21st International Conference on Computers and their Applications (CATA 2006)*
9. Akash Garg, Eitan Grinspun, Max Wardetzky and Denis Zorin, “Cubic shells”, *SCA '07 Proceedings of the 2007 ACM SIGGRAPH/Eurographics symposium on Computer Animation*, pp 91-98
10. Miklos Bergou, Saurabh Mathur, Max Wardetzky and Eitan Grinspun, “TRACKS: toward directable thin shells”, Article No. 50, *SIGGRAPH '07, ACM Transactions on Graphics (TOG)*, Vol. 26, No. 3, July 2007
11. Ari Stern and Eitan Grinspun, “Implicit-explicit variational integration of highly oscillatory problems”, *Multiscale Model Simulation*, Vol. 7, No. 4, pp 1779-1794, 2009
12. Sebastian Martin, Peter Kaufmann, Mario Botsch, Eitan Grinspun and Markus Gross, “Unified simulation of elastic rods, shells, and solids”, *SIGGRAPH 2010, ACM Transactions on Graphics (TOG)*, Vol. 29, No. 4, July 2010
13. Christopher Batty, Andres Uribe, Basile Audoly, Eitan Grinspun, “Discrete Viscous Sheets”, (an on-line pdf file, no date or publisher given; most recent reference is 2011)
14. Melina Skouras, Bernhard Thomaszewski, Peter Kaufmann, Akash Garg, Bernd Bickel, Eitan Grinspun and Markus Gross, “Designing inflatable structures”, *SIGGRAPH 2014, ACM Transactions on Graphics (TOG)*, Vol. 33, No. 4, July 2014
15. Yinxiao Li, Yonghao Yue, Danfei Xu, Eitan Grinspun and Peter K. Allen (Dept. of Computer Science, Columbia University, NY, USA), “Folding deformable objects using predictive simulation and trajectory optimization”, *International Conference on Intelligent Robots and Systems (IROS)*, 2015
16. Yinxiao Li, Danfei Xu, Yonghao Yue, Yan Wang, Shih-Fu Chang, Eitan Grinspun and Peter K. Allen (Dept. of Computer Science, Columbia University, NY, USA), “Regrasping and unfolding of garments using predictive thin shell modeling”, *IEEE International Conference on Robotics and Automation (ICRA)*, May 2015