

## Reference List 15-464/15-664 April 2, 2015

We started by going through the development of the finite element method in this paper:

O'brien, James F., and Jessica K. Hodgins. "Graphical modeling and animation of brittle fracture." In *Proceedings of the 26th annual conference on Computer graphics and interactive techniques*, pp. 137-146. ACM Press/Addison-Wesley Publishing Co., 1999. <http://graphics.berkeley.edu/papers/Obrien-GMA-1999-08/index.html>

The following paper discusses how to make the approach robust to large deformations, including element inversion:

Irving, Geoffrey, Joseph Teran, and Ron Fedkiw. "Invertible finite elements for robust simulation of large deformation." In *Proceedings of the 2004 ACM SIGGRAPH/Eurographics symposium on Computer animation*, pp. 131-140. Eurographics Association, 2004. <http://dl.acm.org/citation.cfm?id=1028541>

Making finite element simulation fast is often done using model reduction, as in this paper:

Barbič, Jernej, and Doug L. James. "Real-time subspace integration for St. Venant-Kirchhoff deformable models." In *ACM Transactions on Graphics (TOG)*, vol. 24, no. 3, pp. 982-990. ACM, 2005. <http://graphics.cs.cmu.edu/projects/stvk/>

Using finite element techniques to skin rigged characters brings challenges of speed and artist control.

This paper looks at how finite element simulation for character skinning can be made fast:

McAdams, Aleka, Yongning Zhu, Andrew Selle, Mark Empey, Rasmus Tamstorf, Joseph Teran, and Eftychios Sifakis. "Efficient elasticity for character skinning with contact and collisions." In *ACM Transactions on Graphics (TOG)*, vol. 30, no. 4, p. 37. ACM, 2011. <http://pages.cs.wisc.edu/~sifakis/projects.html>

This paper looks at speeding up the self collisions in particular, such as those that occur with a hand:

Teng, Yun, Miguel A. Otaduy, and Theodore Kim. "Simulating articulated subspace self-contact." *ACM Transactions on Graphics* 33, no. 4 (2014).

<http://www.mat.ucsb.edu/~kim/SASS/>

This paper focuses on artistic control, converting finite element simulations into rig space:

Hahn, Fabian, Sebastian Martin, Bernhard Thomaszewski, Robert Sumner, Stelian Coros, and Markus Gross. "Rig-space physics." *ACM Transactions on Graphics (TOG)* 31, no. 4 (2012): 72.

<https://graphics.ethz.ch/publications/papers/paperHahn12.php>