References for 15-462 for April 22, 2014 – Cloth and Fluid Simulation

This paper covers Verlet integration, iterative constraint satisfaction, and use of this idea to simulate particles, cloth, and rag doll characters.

Jakobsen, Thomas. "**Advanced character physics**." In Game Developers Conference, pp. 383-401. 2001. http://www.cs.unc.edu/~lin/COMP259/PAPERS/verlet.doc

We have used the idea for interactive cloth simulation: http://www.kentoh.com/publications/

A somewhat classic paper on cloth simulation using a basic spring-mass structure can be found here:

Bridson, Robert, Ronald Fedkiw, and John Anderson. "**Robust treatment of collisions, contact and friction for cloth animation**." In ACM Transactions on Graphics (ToG), vol. 21, no. 3, pp. 594-603. ACM, 2002. https://graphics.stanford.edu/papers/cloth-sig02/

The following paper tries to set parameters for a spring-mass cloth simulation to match behavior observed in video.

Bhat, Kiran S., Christopher D. Twigg, Jessica K. Hodgins, Pradeep K. Khosla, Zoran Popović, and Steven M. Seitz. "**Estimating cloth simulation parameters from video**." In Proceedings of the 2003 ACM SIGGRAPH/Eurographics symposium on Computer animation, pp. 37-51. Eurographics Association, 2003. http://graphics.cs.cmu.edu/projects/clothParameters/

Very nice results can be obtained by simulating cloth at the yarn level and the way in which the yarns intertwine.

Kaldor, Jonathan M., Doug L. James, and Steve Marschner. "**Simulating knitted cloth at the yarn level.**" In ACM Transactions on Graphics (TOG), vol. 27, no. 3, p. 65. ACM, 2008. http://www.cs.cornell.edu/projects/YarnCloth/

Practical fluid simulation models for computer graphics were perhaps first introduced by this paper.

Foster, Nick, and Dimitri Metaxas. "Realistic animation of liquids." Graphical models and image processing 58, no. 5 (1996): 471-483. http://people.cs.clemson.edu/~dhouse/courses/2012/419/papers/fostermetaxas97.pdf

However, the approach that became most popular and is still the basis for many first fluid solver implementations is Jos Stam's paper on Stable Fluids.   Here is one version of that approach, written for easy implementation.

Stam, Jos. "**Real-time fluid dynamics for games**." In Proceedings of the game developer conference, vol. 18, p. 25. 2003.   http://www.autodeskresearch.org/pdf/GDC03.pdf

To see results of recent research on realistic fluid simulation, take a look at the home pages of Ron Fedkiw and Robert Bridson. http://www.cs.ubc.ca/~rbridson/   http://physbam.stanford.edu/~fedkiw/