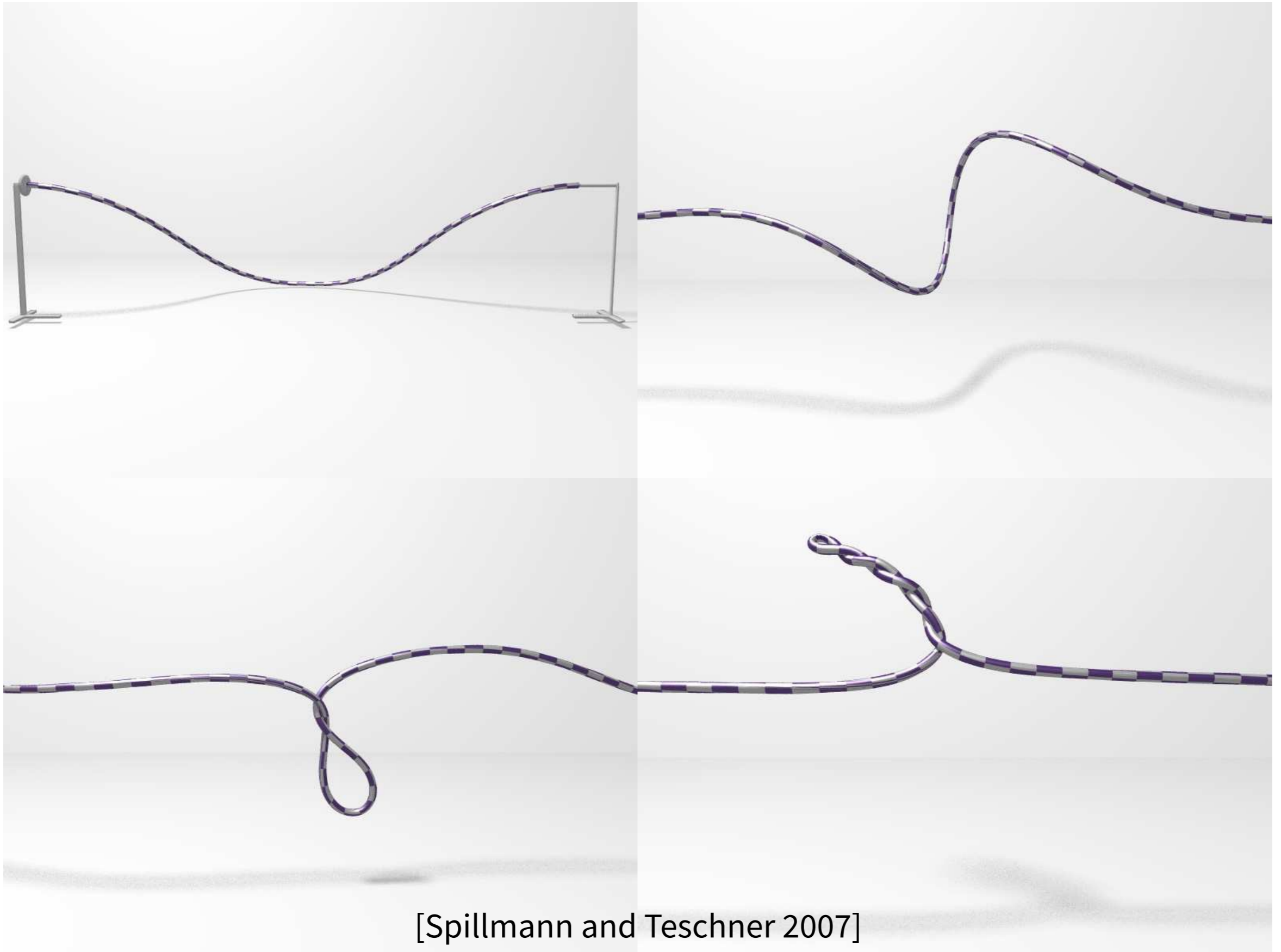


[Bertails et al. 2006]

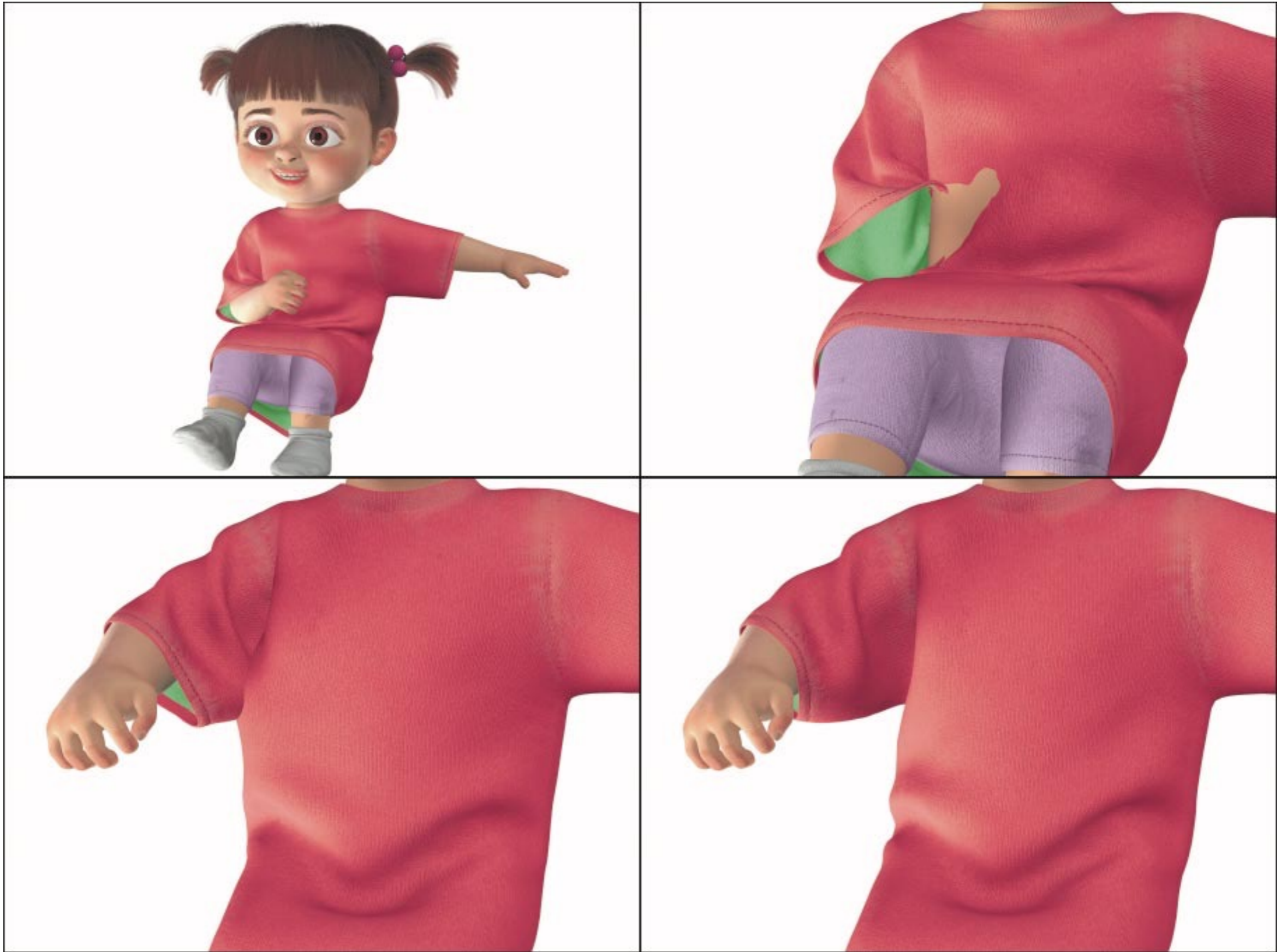


[Spillmann and Teschner 2007]

# Strand models

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- Bertails et al., “Super-helices for predicting the dynamics of natural hair” (2006)
- Spillmann and Teschner, “CORDE: Cosserat rod elements for the dynamic simulation of one-dimensional elastic objects” (2007)
- Bergou et al., “Discrete elastic rods” (2008), “Discrete viscous threads” (2010)



[Baraff et al. 2003]





[Daviet et al. 2011]

# Cloth contact

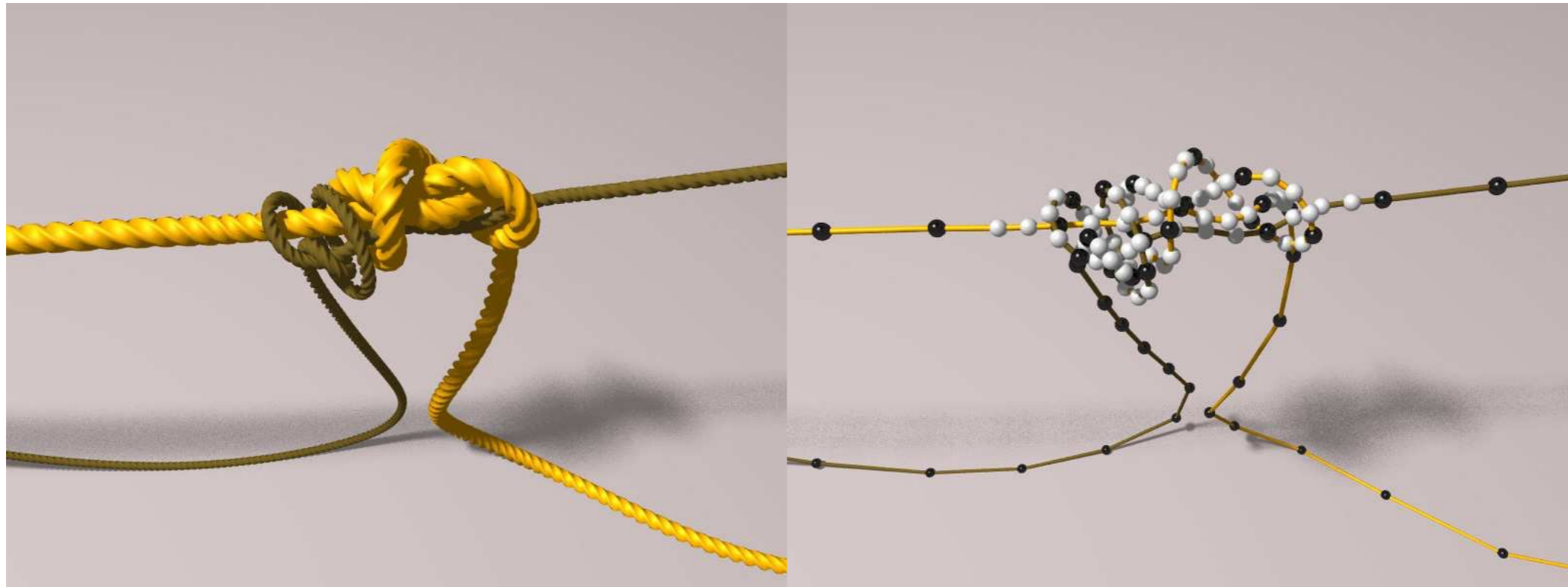
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## ***Collision resolution:***

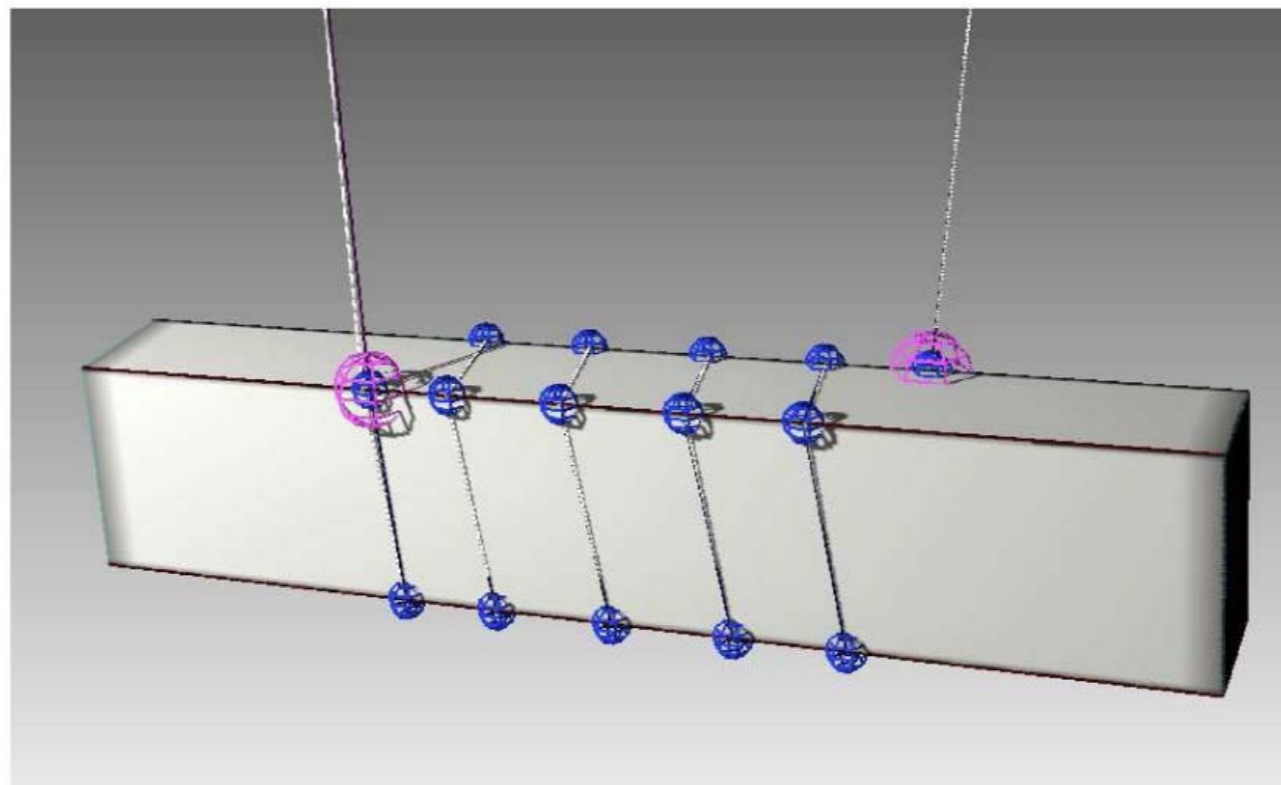
- Provot, “Collision and self-collision handling in cloth model dedicated to design garments” (1997)
- Bridson et al., “Robust treatment of collisions, contact and friction for cloth animation” (2002)
- Sifakis et al., “Globally coupled impulse-based collision handling for cloth simulation” (2007)
- Harmon et al., “Robust treatment of simultaneous collisions” (2008)

## ***Untangling:***

- Baraff et al., “Untangling cloth” (2003)
- Volino and Magnenat-Thalmann, “Resolving surface collisions through intersection contour minimization” (2006)



[Spillmann and Teschner 2008]



[Servin et al. 2011]

# Strand contact

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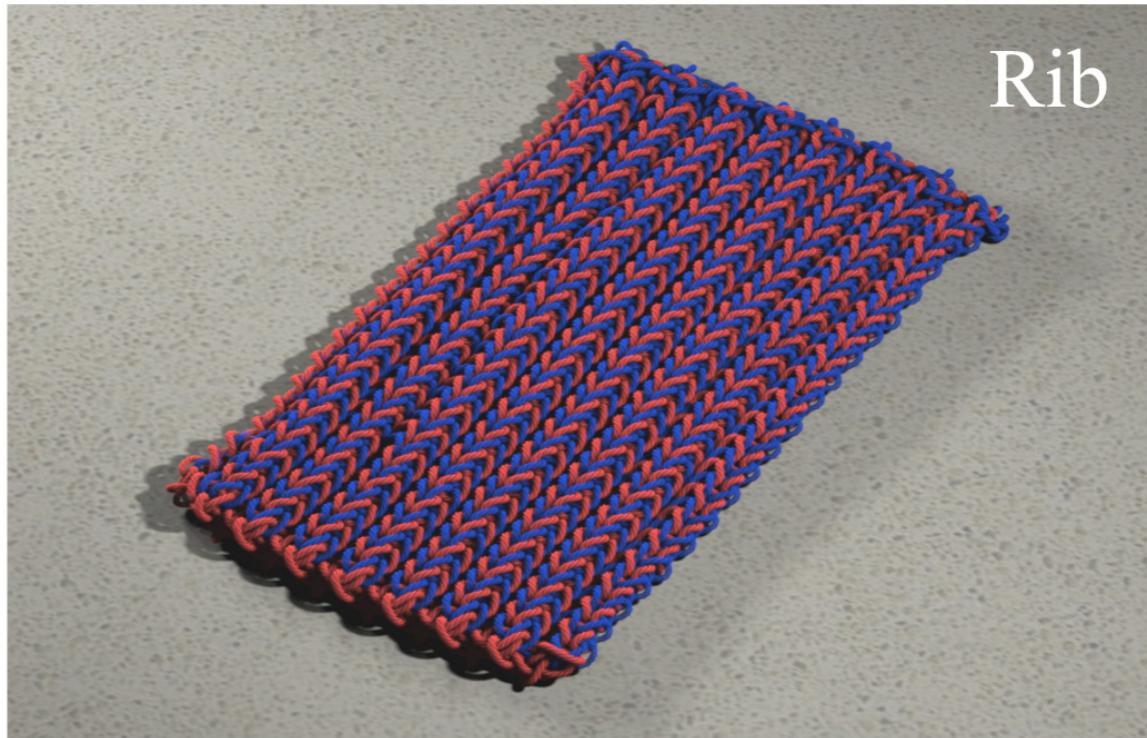
## ***Hair contact:***

- McAdams et al., “Detail preserving continuum simulation of straight hair” (2009)
- Daviet et al., “A hybrid iterative solver for robustly capturing coulomb friction in hair dynamics” (2011)
- Kaufman et al., “Adaptive nonlinearity for collisions in complex rod assemblies” (2014)

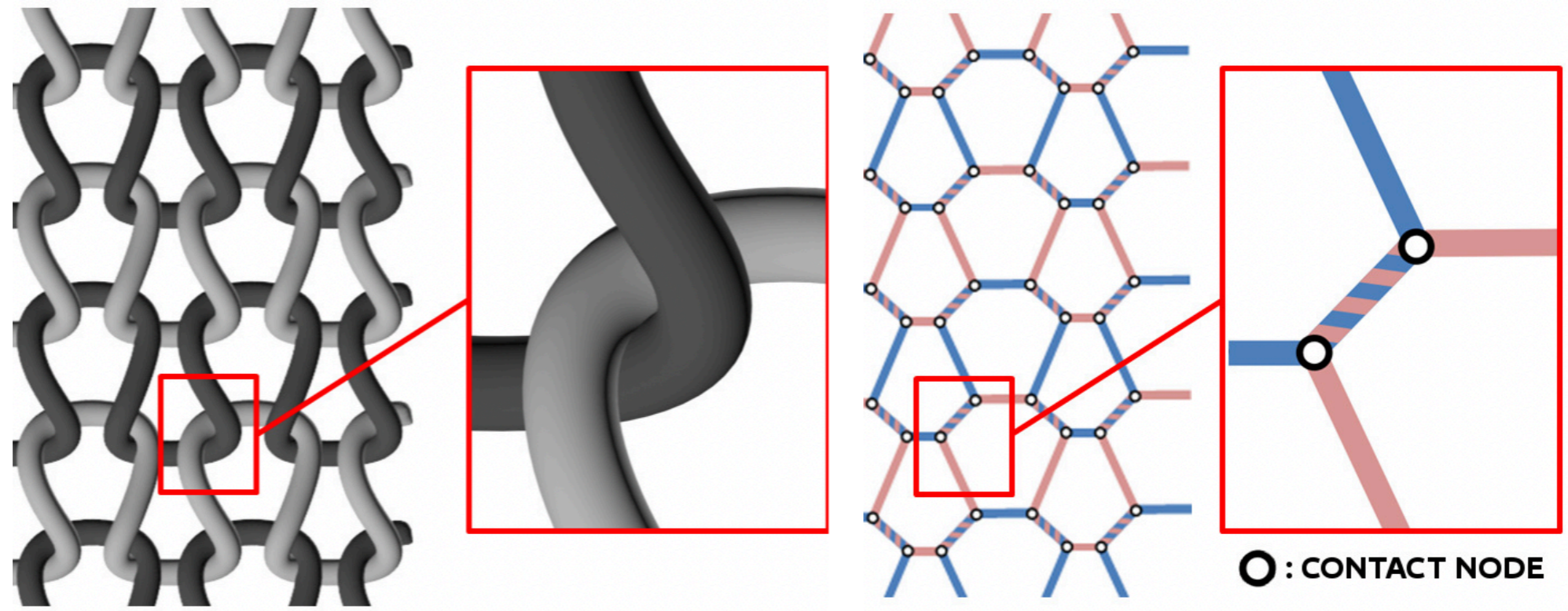
## ***Adaptive strands:***

- Spillmann and Teschner, “An adaptive contact model for the robust simulation of knots” (2008)
- Servin et al., “Hybrid, multiresolution wires with massless frictional contacts” (2011)
- Sueda et al., “Large-scale dynamic simulation of highly constrained strands” (2011)





[Kaldor et al. 2008]



[Cirio et al. 2017]

# Yarn-based cloth

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- Kaldor et al., “Simulating knitted cloth at the yarn level” (2008), “Efficient yarn-based cloth with adaptive contact linearization” (2010)
- Cirio et al., “Yarn-level simulation of woven cloth” (2014), “Yarn-level cloth simulation with sliding persistent contacts” (2017)

# **Course announcements**

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# Assignments and presentations

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- **Assignment 2** grades posted on Moodle
- **Assignment 3** due this Thursday
  - Most of you have 1 or 2 late days left
- Choose your **presentation topic** by this Friday



# Final project

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Choose a topic:

- Reimplement a recent(ish) paper
- Add several extensions to an existing assignment
- Pick a physical phenomenon, design algorithm to simulate it

Amount of work should be about 50% more than an assignment

# Final project schedule

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1. Ideally, talk to me about your intended project soonish
2. Submit **proposal** the week after Minor II
  - Required format will be posted on course webpage
3. Submit **results** (videos + code) ~~on second last week of class~~
4. **Project presentations** on last week of class

Submission date  
will be later