Curriculum Vitae

Fabiana Diotallevi was born in Rome, Italy, on the 26th of March 1980. During the first 23 years of her life she lived in Rome, where she went to elementary, middle, and high school. In 1998 she started studying Physics at the University "La Sapienza" of Rome, where she graduated in theoretical physics in 2003 with the thesis "Dynamics of granular media on rough surfaces", having Prof. Angelo Vulpiani and Prof. Umberto Marini Bettolo Marconi as supervisors. Then, in June 2003, she moved to Amsterdam where she started a PhD in Biophysics at the Institute for Atomic and Molecular Physics (AMOLF), in the group "Theory of Biomolecular Matter" of Prof. Bela Mulder and in collaboration with Prof. Anne Mie Emons of the laboratory of Plant Cell Biology of Wageningen University. During her PhD she spent three months (04-06/2005) at the Curie Institute in Paris, hosted by Prof. Jean Francois Joanny, working on a project on the hydrodynamic-driven motion of Acetobacter cells. One year later (07-09/2006) she was a guest in the Molecular Dynamics group of Prof. Giovanni Ciccotti at University "La Sapienza", where she performed work on hydrodynamic interactions between polymers and solvent. In April 2007 she went back to Rome with a research fellowship on Lattice Boltzmann Simulations applied to capillary phenomena at the Institute for Applied Computation (IAC) in the group of Dr. Sauro Succi.

Stellingen

1. Cellulose plays a fundamental role in our life: besides being the major constituent of paper,wood and textiles, it may serve an even more fundamental function as one of the most important storage points of solar energy and atmospheric CO2 in a potentially usable organic form. In exploiting this resource, basic science of the cell wall is indispensable.
   This thesis

2. Cell wall deposition is a key process in the formation, growth, and differentiation of plant cells. How the plant cell creates and organizes these rigid and ordered textures starting from cellulose microfibrils (CMFs), is very much an open and challenging question, whose resolution will require not only more quantitative experimentation, but also physics-based theoretical insight.
   This thesis

3. Despite their simplicity, Lattice Boltzmann Simulations are a good tool for a quantitative study of capillary filling phenomena.
   Capillary filling using LB Equations
   F. Diotallevi et al., *submitted to EPJ, 2007*

4. By reacting to the fluid local velocity, particles or polymers immersed in a solvent generate and experience hydrodynamic interactions with each other. Such hydrodynamic coupling, that is often neglected, is responsible for many bizarre and counter-intuitive phenomena.
   Hydrodynamically entrained Sperm Cells
   Riedel et al., *Science, vol. 309, pag. 300, 2005*

5. Science teaches us how to reach a specific target. However, it doesn't say anything about which target is worth to be reached.

6. Music brings all of us together.

Stellingen behorende bij het proefschrift
The Physics of Cellulose Biosynthesis

Fabiana Diotallevi
Wageningen, 26th October 2007