



# Leonardo, Rapunzel and the Physics of Hair

Ray Goldstein DAMTP

7.30pm, Monday 28th November, 2016

Storey's Way, Cambridge CB3 0DS

## Event Information

CSAR lectures are open to all: CSAR members are admitted free, pupils and students may register for free membership at the lecture reception desk. Non-members are asked to make a nominal contribution of £3.00.

**Location:** Wolfson Lecture Theatre, Churchill College, Storey's Way, Cambridge, CB3 0DS

**Refreshments:** Coffee and biscuits are available in the Wolfson Foyer from around 7pm. Before lectures, attendees can use the college canteen for dinner (from 5:45pm) and, after lectures, the bar. Cash can be used at both.

**Car parking:** Attendees may park in the Senior Car Park on Churchill Road off Storey's Way. More parking is available further along Churchill Road, and in the Möller Centre at the far end.

**Membership:** There is a range of membership options; just ask at the reception desk in the lecture theatre foyer before the talk, or visit our website, [csar.org.uk](http://csar.org.uk).

## Ray writes:

*"From Leonardo da Vinci to the Brothers Grimm our fascination with hair has endured in art and science. We love it for its "body" or "volume", the fluffiness and elasticity that comes from its random waves and curls. But apart from a purely tactile response, can we take a more quantitative approach to hair, to explain these macroscopic properties in terms of the behaviour of individual hairs? We know that the important physics governing hair involves the interplay of its elasticity, weight, and curliness, but it is only recently that these have been synthesized into a physical theory. In this talk I will outline the key ideas underlying our theory of the shape of a ponytail, and discuss emerging studies on the dynamics of hair bundles and the physics of yarns and tangled hair."*

Professor Ray Goldstein FRS received undergraduate degrees in chemistry and physics from MIT, and a PhD in physics from Cornell University. In postdoctoral work at the University of Chicago and faculty positions in physics and applied mathematics at Princeton University and the University of Arizona he focused on nonlinear dynamics and pattern formation in physics and biology. He moved in 2006 to the University of Cambridge as the Schlumberger Professor of Complex Physical Systems. He has published papers on a wide variety of subjects, from integrable systems to experimental fluid mechanics, cellular biophysics, and geophysics.

Recognition of his work includes the Stephanos Pnevmatikos Award in Nonlinear Science, the William Hopkins Prize of the Cambridge Philosophical Society, the 2012 Ig Nobel Prize in Physics, the 2016 G.K. Batchelor Prize in Fluid Mechanics, and Fellowship of the Royal Society.

**Please note:** The lecture will be preceded by a five-minute presentation on "Designing Aero-engine Superalloys" by Kathy Christofidou, **CSAR Awardee**

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