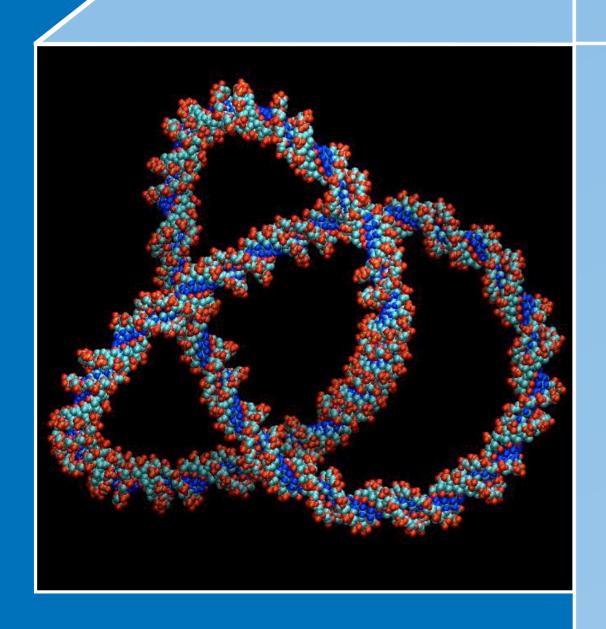# Berlin Mathematical School

BMS Friday Colloquium

Friday 8 February 2013 at 14:15
Tea & Cookies starting at 13:00

BMS Loft, Urania, An der Urania 17, 10787 Berlin

Dorothy Buck
(Imperial College London)

DNA Knots:

Why they are (biologically) important and (mathematically) interesting

Dorothy Buck will survey how the axis of the DNA double helix becomes knotted and linked, and why that's important for cells. She will describe the importance of these DNA knots and links, e.g. by discussing pharmaceuticals that work by controlling this knotting and linking.

Surprisingly, given their importance, DNA knots are not yet well-understood. Buck will therefore also describe the topological models – involving rational tangles, Dehn surgery and Heegaard-Floer homology – to help answer important biological questions about these structures and their formation.

Buck is a Reader in BioMathematics at Imperial College London. In addition to her PhD in Mathematics, she spent 6 years in a wet lab and did a postdoc at the Johns Hopkins School of Medicine. Her main research interests are mathematical biology and three-manifold topology. In particular she harnesses topological techniques to illuminate structural and mechanical features of DNA-protein interactions. She has been awarded over a million pounds in grants by the Engineering and Physical Sciences Research Council (EPSRC) for work in DNA topology.

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