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DNA translocation through graphene nanopores SLAVEN GARAJ, National University of Singapore; Harvard University, SONG LIU, Harvard University; Peking University, JENE A. GOLOVCHENK, DANIEL BRANTON, National University of Singapore — Nanopores are versatile platform for studying structure and behaviour of individual biopolymers. In a nanopore device, an individual DNA molecule in aqueous solution is electrophoretically threaded through the nano-scale pore in a linear fashion. Resulting modulation of the ionic current through the nanopore is characteristic of the geometrical and chemical properties of the translocating molecule. It has been shown that a new class of nanopore fabricated in free-standing single-layer graphene membrane – graphene nanopores – have excellent predisposition to achieve sub-nanometre resolution in discerning features along the length of individual DNA molecules [1]. In this talk, we will demonstrate very high sensitivity of the graphene nanopore current on small variation of the diameter of translocating molecule, and we will examine the dynamics of the DNA molecule within the graphene nanopore. The implications of those results on prospects of physical DNA sequencing will be discussed.

[1] S. Garaj *et al.*, Nature 467, 190-193 (2010).

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