

Abstract Submitted
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**An integrated nanopore-nanochannel system for biodetection:
longitudinally-displaced transverse nanoelectrodes along a nanochannel¹**

XINSHENG SEAN LING, Brown University — In this talk, I'll describe a novel device concept for a biodetection system with combined characteristics of nanopores and nanochannels. Solid-state nanopores drilled in a thin membrane have a short channel length of the order of 20nm or smaller, capable of detecting short features. Nanochannels have their own useful property of providing a 1D confinement for a DNA. To combine these two devices in a single system is of great interest to DNA sequencing and other biodetection applications. Here I describe a new device concept capable of this goal. The device consists of a pair of longitudinally-displaced transverse nanoelectrodes as voltage probes along a nanochannel. The longitudinal displacement should be of 20nm or smaller, thereby effectively making a nanopore on a segment of the nanochannel. I'll describe a feasibility study using a commercial software COMSOL. The sensitivity issues will be discussed.

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