

# Stuttgarter Physikalisches Kolloquium

Fachbereich Physik, Universität Stuttgart  
Max-Planck-Institut für Festkörperforschung  
Max-Planck-Institut für Intelligente Systeme

Ansprechpartner: Prof. Harald Giessen  
E-Mail: giessen@physik.uni-stuttgart.de  
Telefon: 0711 - 685-65111



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Universität Stuttgart, Pfaffenwaldring 57, 70569 Stuttgart-Vaihingen

Universität Stuttgart, Telefon: 0711 - 685-63935

## Exploring nanometer-sized pores for biosensing

**Maria Fyta**  
Universität Stuttgart

### Abstract

Nanosized openings in materials, such as silicon nitride or grapheme can provide possibilities for single-molecule experiments and cheap ultra-fast biomolecule detection techniques. Such techniques involve the threading of a biomolecule in a salt solution through a nanometer-sized pore. The passing through the nanopore can easily be detected based on ionic and electronic current signals. Nevertheless, the underlying physics behind this threading process can become highly complex and needs to be treated with care. Along these lines, this talk will focus on the current state-of-the-art and the use of computational tools at different levels for understanding and optimizing nanopore biosensing.