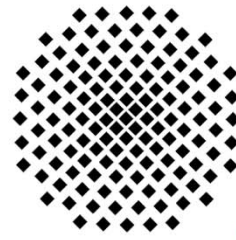


Stuttgarter Physikalisches Kolloquium

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

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Dienstag, 21. Juli 2015

17:15 Uhr

Hörsaal V 57.01

Universität Stuttgart, Pfaffenwaldring 57, 70569 Stuttgart-Vaihingen

Gastgeber: Prof. Harald Gießen, Universität Stuttgart, Telefon: 0711 - 685-65110

Active 3D Plasmonics

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Abstract

We utilize structural DNA technology to achieve intelligent plasmonic nanomachines with engineerable optical response and active functionalities. Plasmonic metal particles are assembled at specific locations on an active 3D DNA origami template with nanometer scale accuracy. The plasmonic system constitutes a well-defined 3D configuration with unique optical response. Due to the intrinsic programmability and excellent functionalities of DNA, the plasmonic nanomachine can respond to external stimulus upon recognition of biochemical events or stimulated movements of the DNA template. Any conformational changes of the plasmonic nanomachine will lead to the near-field interaction changes of the metal particles in the 3D assembly and therefore give rise to immediate optical signal changes in the spectrum, providing an active optical response to external stimulus. Due to the native biocompatibility of DNA, this will enable a new generation of 3D plasmon rulers.