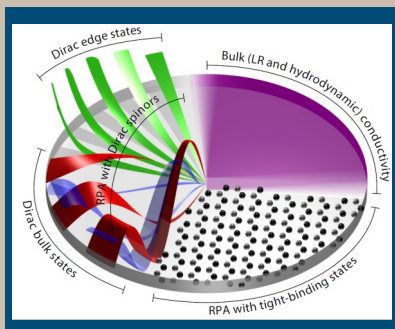


NEWS OF THE MONTH

The role of edge states for quantum plasmons in graphene nanostructures

Edge states are ubiquitous for many condensed matter systems with multi-component wave functions and they are known to play a crucial role for quantum-electron transport in zigzag graphene nanoribbons. In a PRB Rapid Communication, Thomas Christensen and CNG coworkers now show in detail how quantum transitions between bulk states and edge states also have a critical influence on the optical response of graphene nanostructures.



Imagine two graphene nanodisks of the same size. Within classical electrodynamics they are seemingly identical even though they might differ in their atomic-scale details such as in their edge termination. Surprisingly, our quantum mechanical calculations reveal significant differences, with the zigzag version exhibiting a redshift of the dipole resonance and an additional broadening not seen for the armchair version.

In addition to having key importance for graphene plasmonics, our findings also connect to a wider class of systems supporting edge or surface states, e.g., topological insulators such as bismuth bilayers or silicene, MoS2 nanotriangles, nanostructures with Ag(111) facets, or indeed any finite bipartite systems which support zero-energy localized states.

[Go to article](#)

EVENTS

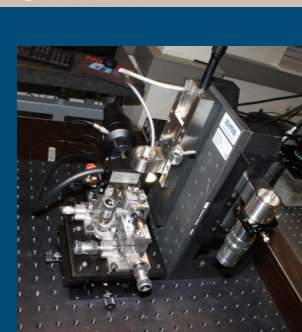
DNRF follow-up meeting

On February 19 the Danish National Research Foundation will be visiting CNG for the annual follow-up meeting. This year they will pay extra attention to the center's education activities.

CNG Journal club

We continue our series of CNG Journal Clubs in 2015. The first will be held Friday January 30 in the Nanotech Lunchroom.

OTHER



New equipment

DTU Fotonik has purchased a Scanning Near-Field Optical Microscope (SNOM) and DTU Nanotech an Atomic force microscopy (AFM) to be used by CNG members and

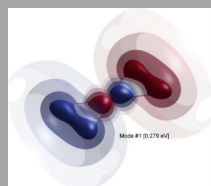
other researchers at the institutes. Both are expected to be installed at DTU early 2015.

UPCOMING LECTURES - By CNG faculty

Professor N. Asger Mortensen, DTU Photonics, gives an invited talk at SPIE Photonics West 2015, in San Francisco, CA, USA, 7-12 February 2015

Professor Antti-Pekka Jauho, DTU Nanotech, gives an invited talk at TRNM 2015, "Towards reality in nanoscale materials", Levi, Finland, February 9 - 12 2015

To see more invited talks and meetings go [here](#)



NEW PREPRINT

"Plasmonic eigenmodes in individual and bow-tie graphene nanotriangles"

Weihua Wang, Thomas Christensen, Antti-Pekka Jauho, Kristian S. Thygesen, Martijn Wubs, and N. Asger Mortensen. [Arxiv: 410.0537v1](#)

Read more at WWW.CNG.DTU.DK

Do you have a good story for the next CNG NEWSLETTER? Write lkmy@nanotech.dtu.dk

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