Doctoral School of Information and Biomedical Technologies
Polish Academy of Sciences (TIB PAN)

SUBJECT:

Local densities of states in periodic nanostructures.

SUPERVISOR:

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DESCRIPTION:

When one designs future engineering devices local density of states (LDOS) is probably the most crucial quantity. For electric (and transport) devices it determines how may carriers are available to conduct, for optical devices it tells us how many carriers can reflect light at each frequency. In our project we propose to calculate LDOS for artificially created nanoscopic systems, in particular for periodic low dimensional structures created using the method of nanosphere litography. This experimental method allows to gradually change the character of 2D network from plasmonic system to quantum dot network. Furthermore, the system may be decorated with vertical nanotubes. The aim of the project is to develop many-body theory capable of computing spatially resolved LDOS for each of these regimes. The work will be based on known axact analytical results combined with material specific numerics.

BIBLIOGRAPHY:

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