



Leibniz-Institut für Analytische
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COLLOQUIUM

Plasmonic Modes in Nanoparticles and Radiative Heat Transfer

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Metal nanoparticles (NPs) exhibit remarkable physical and chemical properties, which are morphology-dependent. Particular interest has been paid in the optical response of NPs because their surface plasmon excitations strongly couple with external light. At the nanoscale, this physical property conducts to new phenomena because these surface plasmon resonances are localized and consequently they enhance the near electromagnetic field. This latter can be used for significantly increasing the sensitivity of optical spectroscopies, and can be of importance in heat transfer at the nanoscale. In this presentation, we present a formalism to obtain the plasmonic response of isolated NPs with complex morphologies, where morphology and composition are varied at the same time. Then, we extend our formalism to study the near field between two NPs. Finally, we discuss how it can be employed to study the radiative heat transfer between two or more NPs.