

# **Transformation Optics, Electron Energy Loss, and Quantum Effects in Plasmonics**

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Transformation optics is a relatively new subfield in electromagnetic research. Yet, it has been at the heart of many of the most promising advancements in electromagnetism in recent years. In combination with the metamaterial design, it has been widely used to realize exotic devices, such as invisibility cloaks or optical lenses with sub-diffraction-limited resolutions. Lately, transformation optics has entered the field of plasmonics. It has not only enabled the design of surface cloaks, beam splitters, and light harvesters, but also proven itself as an invaluable analytical tool in the study of complex plasmonic systems. In this talk, the speaker will first give an overview of the recent progress of transformation optics applied to plasmonics, and then add an entry to the already long list of fields where transformation optics can make a difference, the study of electron energy loss spectroscopy of plasmonic nanoparticles.