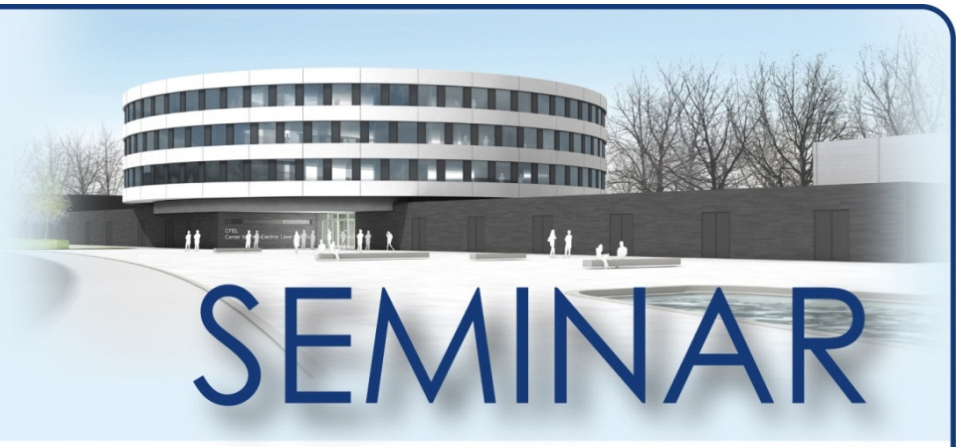
CFEL SCIENCE



SEMINAR

1st April 2020 - 1:45 p.m.

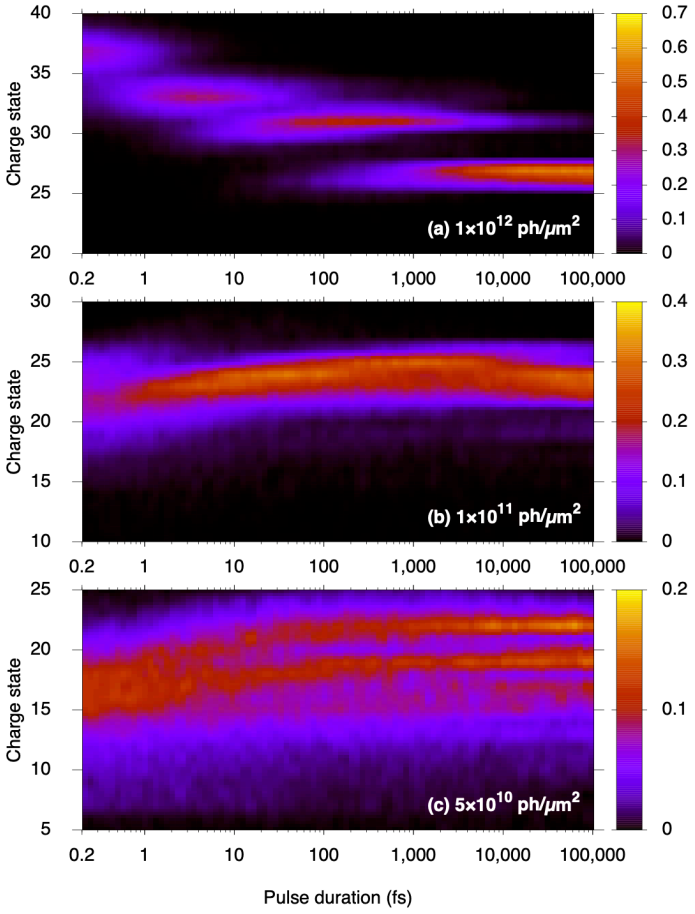
Virtual meeting room in ZOOM (ID: 306 106 260 / PW: 2500)

Sang-Kil Son

Center for Free-Electron Laser Science, DESY, Germany

Breakdown of frustrated absorption in x-ray sequential multiphoton ionization

When intensity of ionizing radiation increases, would ionization increase or decrease? It is not a trifling question, when the radiation comes from x-ray free-electron lasers (XFELs). If higher intensity is attained by shrinking the pulse duration, it turns out that the higher the intensity, the less the ionization. This counterintuitive behavior, so-called frustrated absorption or intensity-induced x-ray transparency, has been regarded as one of the fundamental aspects in the XFEL–matter interaction and has been widely applied for successful XFEL experiments. However, the paradigm of frustrated absorption can break down at extremely high intensity. In this talk, I will present when and how the breakdown of frustrated absorption happens. Also I will discuss implication of this novel pulse-duration dependence of x-ray multiphoton ionization in recent European XFEL SQS experiment.



Host: Robin Santra – CFEL-DESY Theory Division