



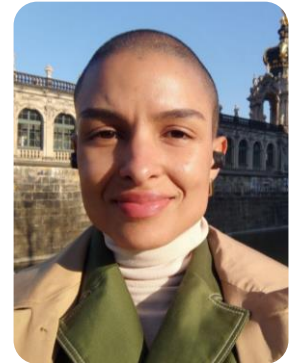
Sonderforschungsbereich 1277

Emergent Relativistic Effects in Condensed Matter -
From Fundamental Aspects to Electronic Functionality



SFB – Colloquium

Speaker: **Dr. Bárbara Rosa**
Technical University Berlin



Date: Tuesday, 27 June 2023, 14:15, H34

Topic: Prospects of multi-layered heterostructures and
single photon sources based on 2D materials

Abstract:

Semiconducting van der Waals devices have recently emerged as a powerful platform for exploring novel light-matter interaction effects. Amongst the broad suitability of those systems for basic studies and novel applications, we highlight two distinct but equally relevant topics for the semiconductor community: twisted multi-layered heterostructures and fabrication of high-quality single-photon emitters (SPEs). In this talk, I will first present our recent study based on the investigation of inter- and intralayer exciton complexes in twisted bi- and trilayers, where we extracted through systematic experimental and theoretical results a clear twist angle dependence of spin-valley properties that varies enormously from two to three twisted layers. Next, we discuss the highlights of single-photon sources based on WSe₂ monolayers. Though this topic has been widely reported in the literature, we address our efforts to explore the substrate dependence of non-classic light generation and, foremost, the quantum coherence properties of SPEs.

Host: Dr. Paulo E. De Faria Junior