

# Max-Planck-Institut für Struktur und Dynamik der Materie

Max Planck Institute for the Structure and Dynamics of Matter



IMPRS UFAST Call for PhD applications 2023/2024



**AR6- Dissipation and decoherence in strong light-matter coupling**

<b>Title of PhD Project</b>	<b>Dissipation and decoherence in strong light-matter coupling</b>
<b>Type</b>	Theoretical (Condensed Matter Physics)
<b>Supervisor(s)</b>	Prof. Angel Rubio Dr. Heiko Appel
<b>Affiliation(s):</b>	Max Planck Institute for the Structure and Dynamics of Matter
<b>Number of positions:</b>	1
<b>Abstract:</b>	Our group has recently extended time-dependent density-functional theory to the realm of quantum electrodynamics (PRA, 90, 012508, (2014)). The goal of the present project is to further develop this novel approach in order to deal with open quantum systems. In particular, a focus is placed on investigating dissipation and decoherence effects for strong and ultrastrong light-matter couplings based on a non-perturbative description with stochastic time-dependent Kohn-Sham equations.
<b>Contact person for scientific questions about the project:</b>	Prof. Angel Rubio: <a href="mailto:angel.rubio@mpsd.mpg.de">angel.rubio@mpsd.mpg.de</a> Dr. Heiko Appel: <a href="mailto:appel@mpsd.mpg.de">appel@mpsd.mpg.de</a>

