



## IMPRS UFAST Call for PhD applications 2020/2021



### Light control of superconductivity in organic superconductors

A. Cavalleri-1

<b>Title of PhD Project</b>	<b>Light control of superconductivity in organic superconductors</b>
<b>Type</b>	Experimental
<b>Supervisor(s)</b>	Prof. Andrea Cavalleri
<b>Affiliation(s):</b>	Max Planck Institute for the Structure and Dynamics of Matter
<b>Number of positions:</b>	1
<b>Abstract:</b>	<p>Ultrashort light pulses can be used to manipulate materials at femtosecond timescales and induce exotic phenomena such as light-induced superconductivity. Recently, we have discovered that in an organic charge transfer salt based on the BEDT-TTF molecule, intense excitation with mid-infrared pulses induces a transient superconducting state for temperatures far above the equilibrium superconducting transition temperature.</p> <p>As a PhD student working on this project you will focus on the development of strong mid-infrared sources using advanced non-linear optics techniques. You will design and realize cutting-edge pump-probe setups that make use of tailored excitation pulses to control molecular materials. You will perform experiments on different organic superconductors, aimed at measuring the optical and magnetic properties of the material in the perturbed state. This will provide a deeper understanding of the light-induced superconducting state, which will reveal how high-<math>T_c</math> superconductivity can be manipulated, paving the way to the design of room temperature superconductors.</p>
<b>Contact person for scientific questions about the project:</b>	Andrea Cavalleri: <a href="mailto:andrea.cavalleri@mpsd.mpg.de">andrea.cavalleri@mpsd.mpg.de</a>  Michele Buzzi: <a href="mailto:michele.buzzi@mpsd.mpg.de">michele.buzzi@mpsd.mpg.de</a>