



复旦大学物理系 Colloquium

Time: 10:00 am, Tuesday, 2021.04.13

Zoom ID: 819 8505 9135 Password: 379846

Location: Room C108, Jiangwan Physics Building

Ultrafast X-ray science at ALLS

François Légaré

Institut national de la recherche scientifique
Energy Materials Telecommunications center

Abstract: The Advanced Laser Light Source (ALLS) is a unique user facility located at INRS-EMT (Varennes, Canada) counting on 40M CDN\$ of investment since 2002. Using this facility, my team is developing high brightness table-top ultrafast X-ray sources using the nonlinear optical process of high harmonic generation (HHG). Our goal is to use these sources to track ultrafast dynamics and its control in molecules and solids. During my talk, I will first present an overview for the important time scales to track dynamics in matter. Following this, the process of HHG will be described justifying the development of laser sources delivering near single-cycle pulses as well as at long wavelengths. Different approaches investigated by my team will be presented. Finally, recent results on using these HHG sources to track ultrafast magnetization dynamics will be discussed.



Biography: Prof. François Légaré is a chemical physicist who specializes in developing novel approaches for ultrafast science and technologies, as well as biomedical imaging with nonlinear optics (Ph.D. in chemistry, 2004 – co-supervised by Profs. André D. Bandrauk and Paul B. Corkum). Since 2013, he is Full Professor at the Energy Materials Telecommunications Research Centre of the Institut national de la recherche scientifique (INRS-EMT) and director of the Advanced Laser Light Source (ALLS, CFI investment of 21M\$). Légaré is a Fellow of the Institute of Physics UK (2012), Fellow of the Institute of Nanotechnology (2014), member of the Global Young Academy (2014), Fellow and senior member of the Optical Society (2017) and a member of The College of New Scholars, Artists and Scientists of the Royal Society of Canada (2017). He was awarded the Herzberg medal from the Canadian Association of Physics in 2015 and the Rutherford Memorial Medal in physics of the Royal Society of Canada in 2016. Furthermore, he is fostering the transfer of technologies to Canadian spin-off companies, including few-cycle Inc. (founded in 2013) and FemtoGate (founded in 2019).