

Evolution of Scientific Research from 3rd to 4th Generation Light Sources

Fulvio Parmigiani

INFN-TASC and Catholic University at Brescia-Italy

The VXFEL project is aimed to design and build a radiation source in the soft X-ray region with a very high brilliance, defined and useful time structure of the radiation pulses in the sub-ps domain and variable polarization. These features will open an entire new field of research bringing our knowledge at the frontier of the feasible experiments for the study of condensed matter and gas phase systems.

The photon flux, several order of magnitude order higher than the actual flux in third generation machines and a well characterized time structure of the pulses in the sub-ps regime, will give access to novel and advanced experiments on time resolved momentum space microscopy, nano-spectroscopy of soft and hard matter, transient grating spectroscopy in liquid-fluid, glasses and crystals. In addition, the variable polarization will open the study of dichroic, time resolved, and nano-scale spectroscopies.

Scope of this presentation is to give a brief but meaningful presentation of the potential applications of the VXFEL radiation source.

Prof. Fulvio Parmigiani

Dipartimento di Matematica e Fisica

Università Cattolica del Sacro Cuore

<http://www.dmf.bs.unicatt.it/>

Via Musei, 41

25121 Brescia

Italia

Tel. +39-030-2406-708

Fax +39-030-2406-742