

## Free-electron-laser simulations for the soft X-ray beamline of SwissFEL

*Tuesday, 27 September 2016 15:20 (20 minutes)*

SwissFEL is a X-ray free-electron laser (FEL) facility at the Paul Scherrer Institut that will serve two beamlines: 1) Aramis, a hard X-ray beamline with a wavelength range between 0.1 and 0.7 nm that it is presently under commissioning, and 2) Athos, a soft X-ray beamline expected to provide FEL radiation by 2020 for wavelengths between 0.65 and 5 nm. In this talk FEL simulations for the Athos case will be presented. The beamline consists of 16 undulator modules, each of them with a period of 38 mm and a total length of 2 m. Simulations for the standard Self-Amplified Spontaneous Emission (SASE) case with planar and helical undulators will be shown. Moreover, simulations for the optical klystron configuration, in which magnetic chicanes are used to reduce the FEL saturation length, will be presented. Finally, optimizations of the undulator tapering to maximize the FEL energy will be shown.

**Presenter:** Mr FESER, Fabio (PSI)