

# Free Electron Laser experiments at SPARC

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**Amphithéâtre – Bâtiment Central**

Séminaires

*SPARC is a single pass free electron laser test facility realized in collaboration between the main Italian research institutions and devoted to experiments of light amplification in different beam conditions. While the laser was commissioned in self amplified spontaneous emission (SASE) mode during the last year, the operation in seeded mode has been recently demonstrated. The amplifier has been seeded with the second harmonic of the Ti:Sa driver laser generated in a crystal, and with higher order harmonics generated in a gas cell. The two different seed sources allowed to explore different regimes of operation for a seeded free electron laser. We describe the main experimental results, with the observation of harmonics up to the 11th of the fundamental and the operation of the FEL in cascaded mode, driven both by seed generated in crystal and in gas (Ar). The superradiant cascaded concept will be described and the main results achieved will be presented.*

*Finally the laser has been also operated in self amplified spontaneous emission mode, with a strongly chirped longitudinal phase space, compensating the chirp by accordingly tapering the undulator gaps. Spectra with and without taper have been collected. A substantial increase of the pulse energy in combination with spectra with a single coherence region have been detected in presence of the taper.*

**Formalités d'entrée** : accès libre dans l'amphi du Pavillon d'Accueil. Si la manifestation a lieu dans le Grand Amphi Soleil du Bâtiment Central, merci de vous munir d'une pièce d'identité et de prévenir le secrétariat en charge de l'événement.

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