

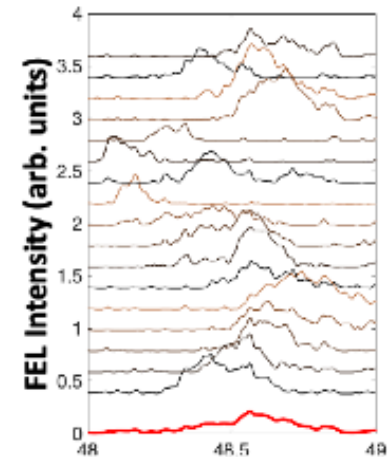
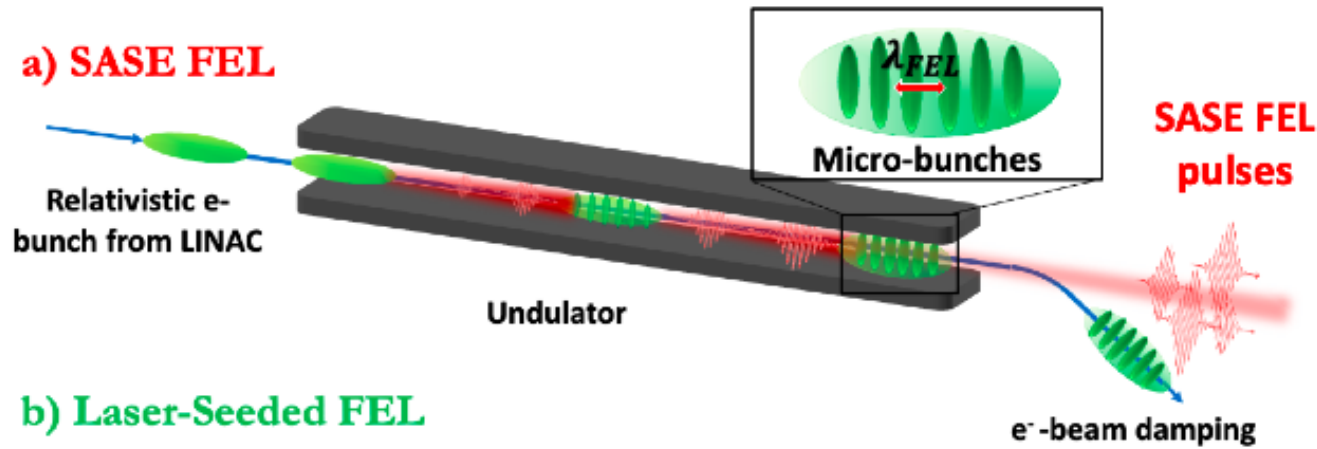
QUANTUM SIGNATURES IN FEL LIGHT

X-ray Quantum
Optics

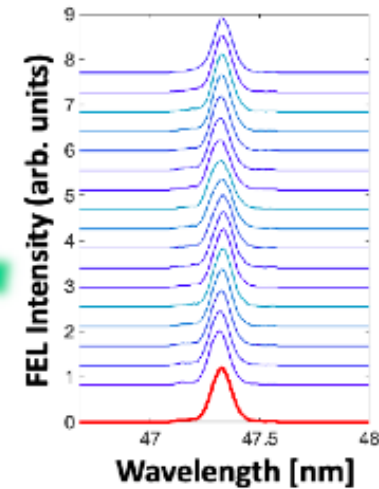
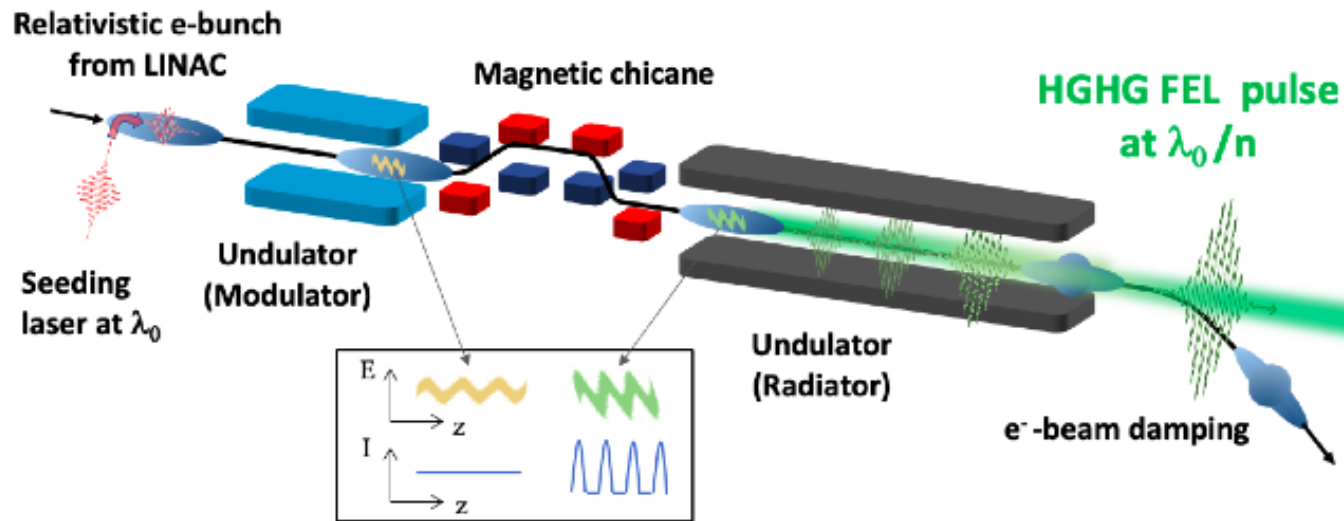
F. Benatti (UniTS), S. Dimitri (Elettra), R. Floreanini (INFN),
F. Parmigiani (UniTS, Elettra), G. Perosa (UniTS),
S. Olivares (UniMI)

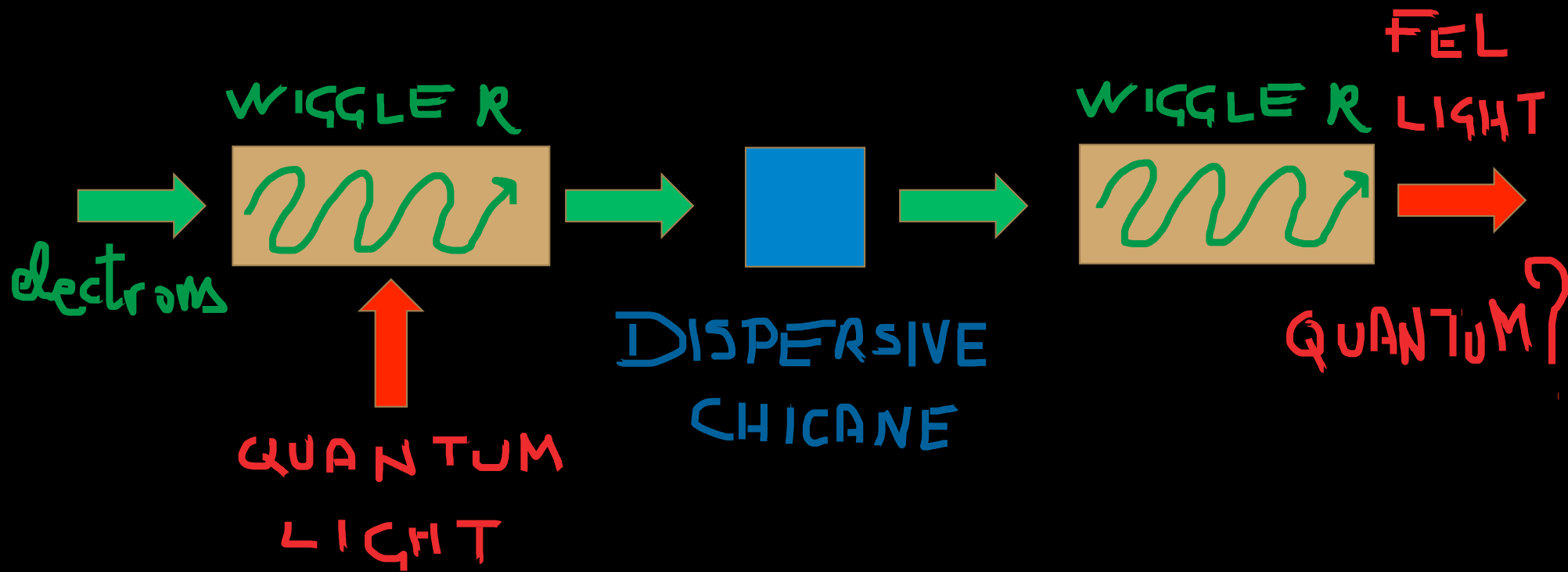


a) SASE FEL



b) Laser-Seeded FEL





Outlook and literature

- FEL Light Coherence

1. O.Y. Gorobtsov, et al: **Seeded X-ray free-electron laser generating radiation with laser statistical properties**, *Nat. Comm.* **9**, 4498 (2018).
2. F.B., S. Olivares, G. Perosa, D. Bajoni, S. Dimitri, R. Floreanini, L. Ratti, F. Parmigiani: **Quantum state features of the FEL radiation from the occupation number statistics**, to appear in *Optics Express*

- Electrons recording Photon Statistics

3. R. Dahan: **Imprinting the quantum statistics of photons on free electrons**, *Science* **373**, eabj7128 (2021).

- Quantum Fel and Classical Limit

4. G.R.M. Robb, R. Bonifacio: **Coherent and spontaneous emission in the quantum free electron laser**, *Physics of Plasmas* **19**, 073101 (2012)
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