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The SPARC_LAB Thomson source upgrade

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The SPARC_LAB Thomson source is a compact X-ray source based on the Thomson backscattering process. The electron beam energy ranges between 30 and 150 MeV, the electrons collide head-on with the Ti:Sapphire FLAME laser pulse the energy of which ranges between 1 and 5 J with pulse lengths in the 25 fs–10 ps range, providing an X-ray energy tunability in the range of 20–500 keV. After the second commissioning run of June 2015 a new Interaction Region has been designed to optimize the alignment of the two colliding beams and increase the so far obtained photon yield. To improve the electron beam diagnostic after collision a focusing doublet is now available in the electron dumping line that will also help in reducing the background contribution to the X-ray detector due to the electron beam divergence up to the absorber. The new setup is here presented.

Primary author: VACCAREZZA, Cristina (LNF)

Presenter: VACCAREZZA, Cristina (LNF)

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