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Study and Development of High Power Pulsed Laser System based on an Injected Enhancement Cavity for MariX

MariX Project focuses on the development of a compact machine to produce beams of high brilliance monochromatic tunable X-rays with energy in the range from 30 to 150 keV, exploit methods currently used at synchrotrons and implement them in a laboratory size. The goal is to provide an X-rays average flux up to 10^{13} ph/s. the X-rays are generated by head-on collisions between bunches of electrons and laser light pulses. This work is based on the photon machine for the ICS X-ray source. The development of the photon machine, aimed at delivering a CW train of laser pulses with a repetition rate of 100 MHz and about 10 mJ of energy per pulse (1 MW average power), address the construction of a high finesse Fabry-Perot cavity injected by a high average power (100 W) and high repetition rate pulsed laser system.

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