

BriXsinO high-flux dual X-ray and THz radiation source based on Energy Recovery Linacs

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We present the detailed design of a compact light source named BriXsinO. BriXsinO is a dual high flux radiation source Inverse Compton Source (ICS) of X-ray and Free-Electron Laser of THz spectral range radiation conceived for medical applications and general applied research. The accelerator is a push-pull CW-SC Energy Recovery Linac (ERL) based on superconducting cavities technology and allows to sustain MW-class beam power with just one hundred kW active power dissipation/consumption. Moreover, the BriXsinO layout allows performing two pass beam acceleration experiments.

ICS line produces 33 keV monochromatic X-Rays via Compton scattering of the electron beam with a laser system in Fabry-Pérot cavity at a repetition rate of 100 MHz. The THz FEL oscillator is based on an undulator imbedded in optical cavity and generates THz wavelengths from 15 to 50 micron.

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