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Short Period Apple-X Undulator Modeling for the AQUA Line of the Future EuPRAXIA@SPARC_LAB Facility

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We present the study for a short period Apple-X variable polarizing undulator, with small gap of operation and high magnetic field, which will be the base module for the AQUA line of the EuPRAXIA@SPARC_LAB FEL facility, of next realization at INFN Laboratory of Frascati. The undulator allows to achieve radiation between 3 and 5 nm, the so called water-window, with a 1 GeV electron beam energy, lower than other FELs operating in the world, so giving the possibility to have a Soft X-ray source with a full polarization control in a more cost effective way and with less required space than the state of the art devices. An overview of the magnetic design is given with the main parameters and performances in terms of the field properties, tuning capabilities and the effects on the electron beam motion.

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Yes

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