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【707】Superconducting Undulators for Porthos

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The next hard X-ray line (2025-2029) at SwissFEL, Porthos, is planned to further extend the photon energy of Aramis, reaching wavelength down to 0.03 nm. Harmonic lasing and inter-undulator chicanes will be implemented to meet this target. Nevertheless the undulator period length must decrease to 10 mm while the K value has to increase to 2.4 with a vacuum gap above 4 mm. These parameters cannot be achieved with conventional technology, neither with advanced permanent magnet cryogenic undulators: it requires the use of superconductors. An overview of this technology will be given, focused on recent Nb3Sn experimental results but alternative approach, like bulk HTS superconductor, will also be discussed.

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