



Superconductivity for
Sustainable Energy Systems
and Particle Accelerators



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HTS magnets for compact and sustainable light sources - developments and ideas

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A key strategic approach to making accelerator-driven light sources more sustainable is to reduce their size. In the case of e.g. Free-Electron Lasers this size reduction can be achieved by using short-period undulators and high-gradient accelerating structures, ranging from X-band structures down to laser-plasma accelerators (LPA). HTS magnet technology can play a key role in this approach, as it enables very compact but strong magnets for light production as well as for the transport and matching of the particle beam.

We give an overview of our R&D on short-period HTS undulators and highly compact HTS magnets and beamline modules specially developed for capturing and transporting LPA-generated electron bunches. We present our view on the potential of this technological path and our ideas for further improving the resource efficiency of compact superconducting magnets.

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