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Status of the STAR Project and perspectives for a CLS in Africa

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The Southern European Thomson back-scattering source for Applied Research (STAR) project, led by INFN and hosted at the University of Calabria (South Italy), represents a cutting-edge platform for producing high-brilliance hard X-ray (up to 350 keV) photon beams through inverse Compton scattering (ICS). With the successful upgrade of its high-energy linac (STAR-HEL) to reach electron beam energies of up to 150 MeV using advanced C-band technology, STAR stands as a model for developing compact, cost-effective high-gradient accelerators to serve user facilities. We illustrate the status of the STAR project and propose leveraging its technological framework to establish the first Compton light source (CLS) on an African university campus or an equivalent regional facility. The development of such a user facility would be a key milestone in the broader roadmap toward realizing the African Light Source (AfLS) project, fostering high-level research and training in accelerator-based science across the continent. The initiative would not only position Africa as a significant player in global scientific research but would also complement existing infrastructure in South Africa, thus strengthening the foundation for collaborative efforts in accelerator and photon science across Africa.

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