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Accelerator Technologies and Science: Progress and Outlook

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For over half a century, high energy particle accelerators play key role and shape modern nuclear and particle physics, they are also the instruments for the forefront research for the material science and biology. In this talk we briefly overview the most notable accelerator facilities which came into operation since previous 2017 PANIC Conference and now employed for research in nuclear physics, basic energy sciences, neutrinos, high energy particle frontier. We also present upcoming and planned future facilities and outline their main goals, challenges and required R&D. Focus will be given to the core accelerator technologies such as magnets, RF acceleration, and targets as well as leading beam physics developments such as beam cooling, colliding beams and plasma acceleration.

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