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Thoughts on Next Generation X-ray Free-Electron Lasers[1] JOEL WILLIAMS, Colorado State University, SANDRA BIEDRON[2], 1,2,3,4 — Facilities such as the Linac Coherent Light Source at the SLAC National Accelerator Laboratory in Menlo Park CA, the European X-ray Free Electron Laser (XFEL) in Hamburg, Germany, and the FERMI@Elettra facility at Elettra Sincrotrone Trieste in Italy are all up and running. What's next? Compact coherent light sources as well as hard x-ray lasers are being discussed. What in fact might these architectures look like, including the pulse structure and what new physics, particularly in materials science, could these devices probe and reveal? In this presentation, we explore the technical challenges in achieving both compact coherent light sources and very hard x-ray free-electron lasers.

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