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Using XFELs to probe the interaction dynamics of ultra-intense lasers with solid-density matter THOMAS COWAN, Helmholtz Zentrum Dresden Rossendorf and Technische Universitaet Dresden — The unprecedented brightness, temporal structure and coherence of hard x-ray FELs will allow revolutionary new techniques for probing the interaction of ultra-intense lasers with solid density matter. This talk will review new concepts for XFEL-based Small Angle X-ray Scattering to be used to probe the ionization dynamics, laser-plasma instabilities, and transient bulk electron response of laser-driven solid-density plasma.

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