

X-RAY AND INNER-SHELL PHYSICS IN A NEW (AND
BRIGHTER) LIGHT

Steven T. Manson

*Department of Physics and Astronomy
Georgia State University*

The advent of x-ray free electron lasers provides possibilities for the brightest sources of x-ray photons to date. Such sources will render studies of x-ray and inner-shell atomic physics possible that are marginal or undo-able with the best of present x-ray photon sources. Illustrative examples will be discussed, including nondipole effects in atomic photoionization, inner-shell photo-detachment of negative atomic ions, and photo-absorption by endohedral atoms, atoms encaged within a C₆₀ molecule. The focus shall be on how the increased brightness makes the experiments possible, and the theoretical challenges arising from such studies.

This work was supported by DOE and NSF.