

Abstract Submitted  
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**X-ray diffraction assisted spectroscopy of Rydberg states** ADAM KIRRANDER, Harvard-Smithsonian CfA — X-ray diffraction combined with conventional spectroscopy could provide a powerful means to characterize excited atoms and molecules. We demonstrate theoretically how x-ray diffraction from laser excited atoms can be used to determine electronic structure, including angular momentum composition, principal quantum numbers and configuration (channel populations). A theoretical formalism appropriate for highly excited atoms, and easily extended to molecules, is presented together with numerical results for Xe and H atoms.

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