Abstract Submitted
for the DAMOP09 Meeting of
The American Physical Society

Fully relativistic B-spline R-matrix calculations for electron collisions with xenon[1] KLAUS BARTSCHAT, OLEG ZATSARINNY, Drake University — We have applied our recently developed fully relativistic Dirac B-spline R-matrix (DBSR) code [1] to calculate electron scattering from xenon atoms. Results from a 31-state close-coupling model for the excitation function of the metastable ($5p^5 6s$) $J = 0, 2$ states show excellent agreement with experiment [2], thereby presenting a significant improvement over the most sophisticated previous Breit-Pauli calculations [3,4]. This allows for a detailed and reliable analysis of the resonance structure. The same model is currently being used to calculate electron-impact excitation from the metastable $J = 2$ state. The results will be compared with recent experimental data [5] and predictions from other theoretical models [6,7]. [1] O. Zatsarinny and K. Bartschat, Phys. Rev. A **77** (2008) 062701. [2] S. J. Buckman *et al.*, J. Phys. B **16** (1983) 4219. [3] A. N. Grum-Grzhimailo and K. Bartschat, J. Phys. B **35** (2002) 3479. [4] M. Allan *et al.*, Phys. Rev. A **74** (2006) 030701(R). [5] R. O. Jung *et al.*, Phys. Rev. A **72** (2005) 022723. [6] R. Srivastava *et al.*, Phys. Rev. A **74** (2006) 012715. [7] J. Jiang *et al.*, J. Phys. B **41** (2008) 245204.

[1]Supported by the NSF under PHY-0555226 and PHY-0757755.

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Date submitted: 23 Jan 2009 Electronic form version 1.4