Abstract Submitted
for the DAMOP07 Meeting of
The American Physical Society

Dielectronic recombination in highly charged ions to explore correlated high-field few-electron dynamics and QED effects Z. HARMAN, V. MAECKEL, A.J. GONZALEZ MARTINEZ, J.R. CRESPO LOPEZ-URRUTIA, U.D. JENTSCHURA, C.H. KEITEL, H. TAWARA, J. ULLRICH, Max Planck Institute for Nuclear Physics, Heidelberg, Germany, A.N. ARTEMYEV, I.I. TUPITSYN, St. Petersburg State University, Russia — The study of dielectronic recombination with highly charged few-electron ions provides unique possibilities for investigating correlation and QED effects in many-electron systems as well as for exploring the relativistic dynamics of recombination processes. We calculated resonance energies and cross sections for KLL recombination channels into highly-charged Fe, Kr, Xe, Ba, W, and Hg ions [1], applying the multiconfiguration Dirac-Fock and the configuration interaction Dirac-Fock-Sturmian methods, and quantum electrodynamic many-body theory with additional screened QED corrections. State-selected recombination spectra for these He- to B-like ions have been recorded with the Heidelberg electron beam ion trap [2]. A comparison of theory and experiment shows a good overall agreement. However, a few interesting discrepancies are found in specific recombination resonances for initially Li- and Be-like Hg ions, suggesting the need for further studies. [1] Z. Harman *et al.*, Phys. Rev. A 73, 052710 (2006); [2] A.J. González Martínez *et al.*, Phys. Rev. A 73, 052711 (2006) and V. Mäckel, master thesis, University of Heidelberg (2006)

Z. Harman
Max Planck Institute for Nuclear Physics, Heidelberg, Germany

Date submitted: 05 Feb 2007 Electronic form version 1.4