

Abstract Submitted  
for the DAMOP06 Meeting of  
The American Physical Society

**Term dependence of nondipole valence s-photoelectron angular distributions from half-filled shell atoms**<sup>1</sup> VALERIY DOLMATOV, EMRE GULER<sup>2</sup>, University of North Alabama, Florence, AL, STEVEN MANSON, Georgia State University, Atlanta, GA — To date, nondipole photoelectron angular distributions from open-shell atoms have remained poorly studied because of their complexity in both experimental and theoretical studies. To remedy this situation, we have initiated a theoretical research program for studying nondipole effects in these atoms. The aim of this presentation is to demonstrate a dramatic dependence of nondipole valence s-photoelectron angular distributions on final state terms of the open-shell atom-remainder. It turns out that electron correlation affects these nondipole angular distributions crucially but much differently depending on a final state term of the residual ion. As a result, there are marked differences between nondipole contributions to the valence s-photoelectron angular distributions “belonging” to different final state terms of the ion-remainder. This is demonstrated by our calculations for the 4s photoelectrons from the Mn(3d<sup>5</sup>4s<sup>2</sup>, <sup>6</sup>S) atom for the 4s, <sup>5</sup>S and 4s, <sup>7</sup>S final state terms of the ion-remainder. Calculations were performed in a “spin-polarized” random-phase-approximation with exchange (SP RPAE) framework.

<sup>1</sup>The NSF and NASA financial support is acknowledged.

<sup>2</sup>Undergraduate student

Valeriy Dolmatov  
University of North Alabama, Florence, AL

Date submitted: 25 Jan 2006

Electronic form version 1.4