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Stable excited Au^- and Pt^- negative ions: A Regge-pole prediction Z. FELFLI, A.Z. MSEZANE, Clark Atlanta University, D. SOKOLOVSKI, Queen's University of Belfast, UK — Electron elastic scattering from Au and Pt atoms is investigated in the energy region E < 4.0 eV in search of the possibility of forming and observing stable excited Au^- and Pt^- negative ions as Regge resonances. Total elastic cross sections (TCSs) and differential cross sections (DCSs) in both impact energy and scattering angle for the excited Au and Pt atoms are calculated. The investigation uses the recent Regge-pole methodology [1] wherein is embedded the vital electron-electron correlations together with a Thomas-Fermi type potential that incorporates the crucial core-polarization interaction, essential for the existence and stability of most negative ions. From the characteristic dramatically sharp resonances in the elastic total and Mulholland partial cross sections we identify excited Au^- and Pt^- anions and extract their binding energies (BEs). Ramsauer-Townsend minima and shape resonances are also determined. The DCSs also yield the BEs of the Au^- and Pt^- anions [2]. The TCSs for the excited and ground Au^- and Pt^- anions are contrasted as well; they provide a clue to the significant catalytic properties of their nanoparticles. [1] D. Sokolovski *et al*, Phys. Rev. A **76**, 012705 (2007); [2] Z. Felfli *et al*, NIMB, At Press (2010). Supported by U.S. DOE, AFOSR and CAU CFNM, NSF-CREST Program

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