Investigating the Origins of Spin – Polarization in Au (111) : Experiments vs Theory

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Abstract. This study explores the origins of spin polarization in semi-infinite Au(111), examining whether the observed spin polarization arises primarily from the system's initial states or solely through the Photoemission process. To address this, we will integrate both experimental and theoretical results to provide an understanding of this spin-polarization origins, we calculate the electronic band structure with and without the influence of Mott- Scattering, while isolating additional factors, such as the Rashba effect. On the theoretical side the calculations are performed using the SPRKKR method which is based on DFT calculations, which will account for fundamental effects, while the additional one-step model will account for the photoemission process.