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Experimental Study of Magnetic Properties of Ultra-Thin Cobalt Films LEONARDO RIOS, EDGAR J. PATINO, Universidad de los Andes — The origin of spintronics can be traced back to the tunneling experiments made by M. Julliere in 1970 where normal and ferromagnetic metals are intercalated. More recently, superconducting spintronics have been subject of intensive research where the proximity of a superconductor next to the ferromagnet can lead to triplet superconductivity. This is the result of Cooper pairs inside of a magnetic inhomogeneity produced by the magnetization of the ferromagnets used. Despite several achievements such as the discovery of the Giant Magnetoresistance and the generation of exotic superconducting states found in spin valve like structures, a full control and understanding of the magnetic properties of the ferromagnetic materials used has not been easily attained. As a first step towards making novel spintronic devices, we investigate in detail the variation of remanent and saturation magnetization of Cobalt ultra-thin films of thicknesses between 1 to 10 nm. The results indicate that the remanent magnetization in Cobalt changes its direction around a thickness value of 1.8nm. Furthermore, we find that the saturation magnetization increases as the thickness decreases. This result is in contraposition to previous works.

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