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Polarimetry with Nanowires in the UV Solar Corona

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The magnetic field in corona can be measured through the Hanle effect, which is the magnetic field induced modification of the linear polarization signals produced by anisotropic scattering processes. The HI Lyman α 121.6 nm is the most intense emission line of the EUV coronal spectrum, is formed by resonant scattering of the underlying chromospheric emission and is highly sensitive to the Hanle effect. Through the comparison between the measured and the expected polarization in the HI line it is possible to infer the magnetic field in corona. PENCIL (Polarimetry with Nanowires for Coronal Imaging of Ly α) may constitute the ideal candidate to measure the linear polarization of the whole Lyman α 121.6 nm corona. It is a transmitting polarimeter optimized for the Ly α 121.6 nm line, thought as part of an internally occulted coronagraph to be flown aboard a future small solar mission or a sounding rocket. It is a light device, completely free of mechanical moving parts, made by a fixed MgF_2 quarter wave retarder, a nano-wire grid polarizer (nano-WGP) and a MgF_2 variable retarder modulated through a calibrated piezo-clamp (PCVR). The nano-WGP and the PCVR are the two main components of PENCIL and represent a first-ever achievement in the history of technology development for VUV. New technological limits are being challenged in the development of such cutting edge devices. This contribution addresses the status of the project with particular emphasis on the design and manufacturing of the nano-WGP and the PCVR.