

Proposta di Tesi di Dottorato in Tecnologie Spaziali

Università di Firenze, Dipartimento di Fisica e Astronomia

Title – Design and development of control and readout electronics for VL and NIR detectors for scientific instrumentation on board future space missions to detect and characterize exoplanets.

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Description – Design and development of control and readout electronics for VL and NIR/hybrid detectors for scientific instrumentation on board future space missions, aimed at the discovery of exoplanets and the characterization of their atmospheres, with particular emphasis on large missions such as HWO, LIFE, and ultra-high precision (sub- μ s) medium/small/mini-class (e.g. cubesats) spectroscopic/astrometric surveys such as RAFTER, ABITA, OCEAN. Optimization of the S/N ratio both pre- and post- analog-to-digital conversion, including broad-band electromagnetic compatibility and performance, end-to-end (including cabling).

References – slides from Space Technologies Course at UniFi, Department of Physics and Astronomy. J. R. Janesick – Scientific Charge-Coupled Devices, G. H. Rieke Infrared Detectors Array for Astronomy, P. Fortescue – Spacecraft System Engineering, ECSS (European Cooperation for Space Standardization) space standard documentation.

Requirements – basic knowledge of CCD, CMOS and IR detectors and their control and readout electronics.