

Detectors and Compact Spectrometers for high resolution characterization of exoplanets in near infrared

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Abstract:

Exoplanet atmosphere characterization requires NIR spectroscopy from moderate to very high resolution on faint high contrast targets. We explore new concepts for the signal conditioning based on single-mode spectrometers and in particular the VIPA concept, coupled to the detection system. We present the obtained performance and we analyze the signal-to-noise budget involving various important contributors to the noise. We derive lessons learnt from this work on the TRL upgrade of a new concept and we emphasize the key properties of detectors for such science goals now and in future major instruments.