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Título: WSO-UV Spectrographs' Simulations

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Resumen:

The World Space Observatory - Ultraviolet (WSO-UV) is a space telescope, equipped with a high resolution spectrograph (WUVS - WSO UltraViolet Spectrograph) that provides high resolution spectroscopy ($R \sim 55,000$) in two channels VUVES and UVES. VUVES is a far UV echelle spectrograph designed to observe point sources in the range 1020-1800 Å. UVES is the near UV echelle spectrograph, working in the range 1740-3100 Å. These instruments can be evaluated, in terms of performance, from an appropriate overall instrument model through simulations of the expected observations. Since it is not feasible to build and test a prototype of a space-based instrument, numerical simulations performed by an end-to-end simulator are used to model the noise level expected to be present in the observations. The performance of the instrument can be evaluated in terms of noise source response, data quality, and fine-tuning of the instrument design for different types of configurations and observing strategies. The WUVS Simulator has been implemented as a further development of the PLATO Simulator, adapting it to an echelle spectrograph and the WUVS instrument specific characteristics. It has been designed to generate synthetic time series of CCD images by including models of the CCD and its electronics, the telescope optics, the jitter movements of the spacecraft and all important natural noise sources. We provide a detailed description of several noise sources and discuss their properties, in connection with the optical design, the quantum efficiency of the detectors, etc. The expected overall noise budget of the output spectra is evaluated as a function of different sets of input parameters describing the instrument properties.