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Pyxel 2.0: collaborative detector and instrument modelling

Tuesday 10 March 2026 14:00 (1 hour)

Pyxel is an open-source python-based framework designed for simulating images including instrumental effects with a strong focus on detector modelling (CCDs & EM-CCDS, CIS, Hybrid-CMOS, APDs, MKIDs etc.). It has been conceived to easily integrate and pipeline models from multiple contributors and in this way foster collaboration in the instrumentation community. The development is led by ESA since 2017, with ESO joining rapidly the adventure before the first beta release. Since then and especially after the release of the v1.0 in 2021, the number of contributions and regular developers from the community has grown drastically. So far, Pyxel has been used in many different contexts: from end-to-end instrument simulation to specific detector studies, from instrument performance verification to data processing algorithm validation. In this presentation, we give an overview of the framework focusing on the main improvements and evolution since v1.0 and examples of new features. On top of the many models that were added to the framework, the pipeline hosts now to two new model groups “scene generation”and “data processing”to make the framework even more self-consistent.

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