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OBSERVATIONAL IMAGE SIMULATOR OF VISIBLE TELESCOPE IN SVOM MISSION

Abstract

We present observational image simulator of VT (visible telescope) in SVOM (Space-based multi-band astronomical Variable Objects Monitor) mission, which is jointly implemented by the Chinese National Space Agency and the French Space Agency. VT, as an optical payload, plays an important role in follow-up two categories of GRBs (Gamma Ray Bursts): very distant events at higher redshift and faint/soft nearby events. The simulator comprises of i) sky simulation: to simulate star galaxy position and brightness in VT detection with survey catalog, ii) background simulation: to simulate sky brightness from zodiacal light and earthshine, cosmic rays can be simulated, iii) instrument feature simulation: to simulate PSF (point spread function) and noise of instrument, iv) GRB generation simulation: to simulate GRB position, brightness, redshift and generation possibility based on GRB distribution model, and v) observation strategy simulation: to simulate observation limitation from platform orbit position. The simulated image can be helpful to validate the performance of VT design, to understand VT photometry system, and to develop calibration method.