Ultra-Fast IR Detector for Astronomy Transients

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After approximately half a century of development, HgCdTe infrared detectors have become the first choice for high performance infrared detectors, which are widely used in various industry sectors, including astronomy, military reconnaissance, infrared guidance, infrared warning, weather forecasting, and resource detection. The sensitive and fast response mid-IR photodetectors working at room temperature are of increasing demand for numerous applications in the infrared technology. In this work, partially funded for the years 2022/23 by CSNV of INFN, we present a fast IR detector for astronomy realized by using HgCdTe photoconductors by Vigo System S.A (Poland). Nowadays, the research in the time domain astronomy is constantly expanding, achieving nanosecond scale detectors, in order to search fast transients with the temporal scale of the GRB (Gamma Ray Burst) and the FRB (Fast Radio Burst) ones. This ultrafast longitudinal detector is under development at INFN/Frascati by tests at SINBAD, the infrared DAFNE beamline. The detector will be used for observations in the mid-IR range by using a ground-based reflecting telescope at OPC (UNI-Firenze).