Washington University in St. Louis
Office of Technology Management

COMPRESSED-SENSING ULTRAFAST PHOTOGRAPHY (CUP)

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Compressed-sensing ultrafast photography (CUP) is an ultrafast imaging technique that can capture non-repetitive, time-evolving events at up to 100 billion frames per second. Compared to existing ultrafast imaging methods, CUP has a prominent advantage in measuring an x, y, t (x, y, spatial coordinates; t, time) datacube within a single camera snapshot, thereby allowing observation of transient events occurring on a time scale down to tens of picoseconds. In addition, CUP integrates data compression and encryption in the same process, resulting in a fast and secure information transmission.