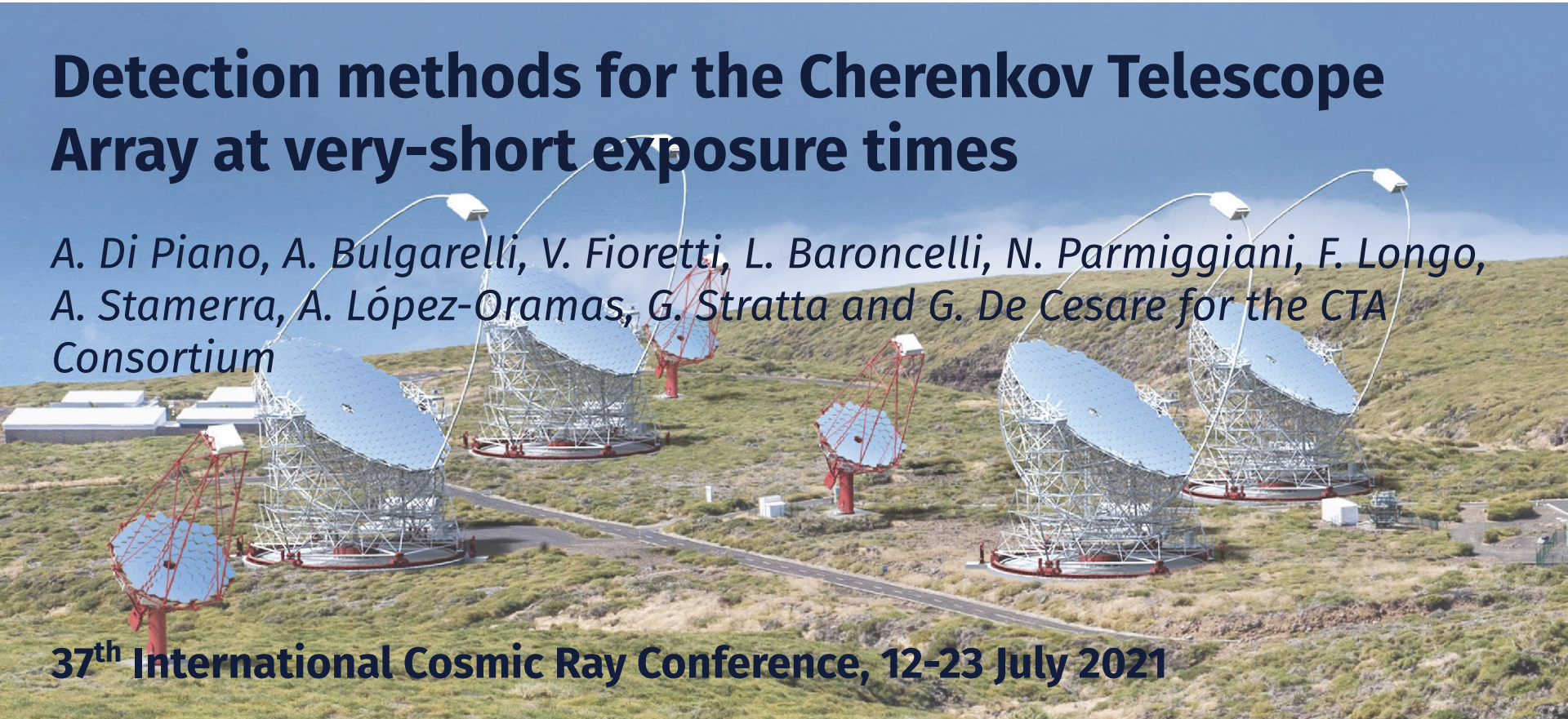
cherenkov telescope array

Detection methods for the Cherenkov Telescope Array at very-short exposure times

A. Di Piano, A. Bulgarelli, V. Fioretti, L. Baroncelli, N. Parmiggiani, F. Longo, A. Stamerra, A. López-Oramas, G. Stratta and G. De Cesare for the CTA Consortium



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The CTA Real-Time Analysis

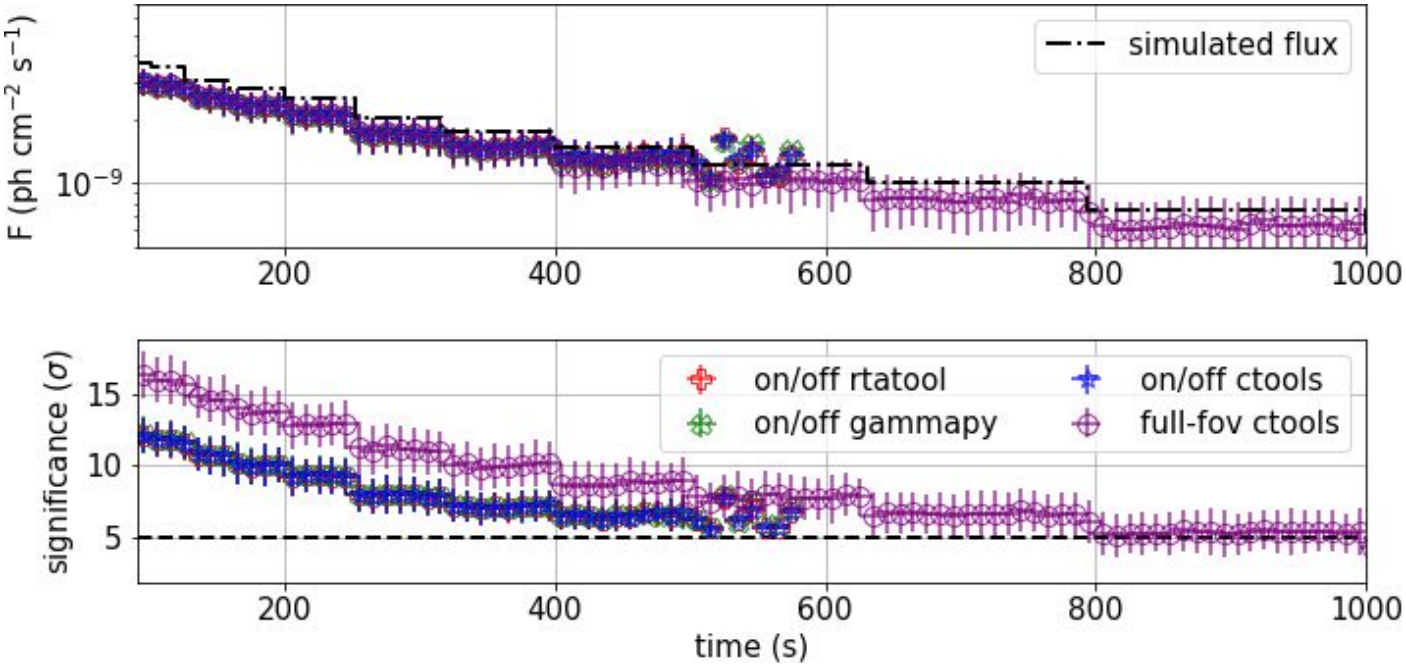
SAG: Science Alert Generation → an **online automated software system** that will analyse data during observations, on time scales **from 10 seconds to 30 minutes.**

Provided by the SAG

- **RECO:** Low-Level Cherenkov data reconstruction;
- **DQ:** online data quality monitoring of reconstructed Cherenkov data;
- **SCI: High-Level Analysis**
  - Science Monitoring → science quick looks (i.e. skymaps, lightcurves);
  - Science Alert Generation → issuing of candidate science alert **within 20 seconds of latency** since data acquisition.

On/off reflection method and full field-of-view maximum likelihood

Lightcurve example from 10^3 realizations of a simulated gamma-ray burst afterglow follow-up, using 10 s time window in the energy range 40 GeV - 150 TeV.



on/off reflection:

- faster
- less sensitive

full field-of-view max. likelihood:

- more sensitive
- slower