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ASIM - Fermi - AGILE simultaneous observation of Terrestrial Gamma-ray Flashes

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The Atmosphere Space Interaction Monitor (ASIM) mission onboard the International Space Station is the first mission specifically dedicated to the observation of Terrestrial Gamma-ray Flashes (TGF) and Transient Luminous Events (TLE). ASIM, together with the Fermi and AGILE satellites, are the only three currently operating missions capable to detect TGFs from space. Depending on orbital parameters, pairs of these missions periodically get closer than few hundreds kilometers, observing the same region on the Earth surface for up to several tens of seconds. This offers the unique chance to observe the same TGF from two different viewing angles. Such observations allow to probe the TGF production geometry and possibly put constraints on production models and electric field geometry at the source.

Here we present four TGFs detected by ASIM and simultaneously detected by Fermi (three events) or AGILE (one event) in the period June 2018 - November 2019. We present location data, light curves, and possible constraints to emission geometry based on coupled observations and Monte Carlo simulations.