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The Light and Fast Terrestrial Gamma Ray Recorder

Terrestrial Gamma-ray Flashes (TGFs) are sub millisecond bursts of radiation from lightning flashes. The accelerated electrons in a lightning strike produce gamma-rays with energies up to tens of MeV, which are potentially harmful to aircrafts and flight crews. The Light and Fast TGF Recorder (LAFTR) is a device flown on a high-altitude weather balloon that will be able to provide data that will be used to reconcile competing TGF formation models through its unprecedented ability to count a high number of photons per event. In particular, LAFTR will reconcile the relativistic feedback and lightning leader tip formation models of TGFs. LAFTR will also be able to acquire data that will be able to confirm theoretical TGF distributions in inland North America, which currently predicts that TGFs should be relatively scarce in Montana. The competing formation models and LAFTR's ability to reconcile the competing models will be outlined.