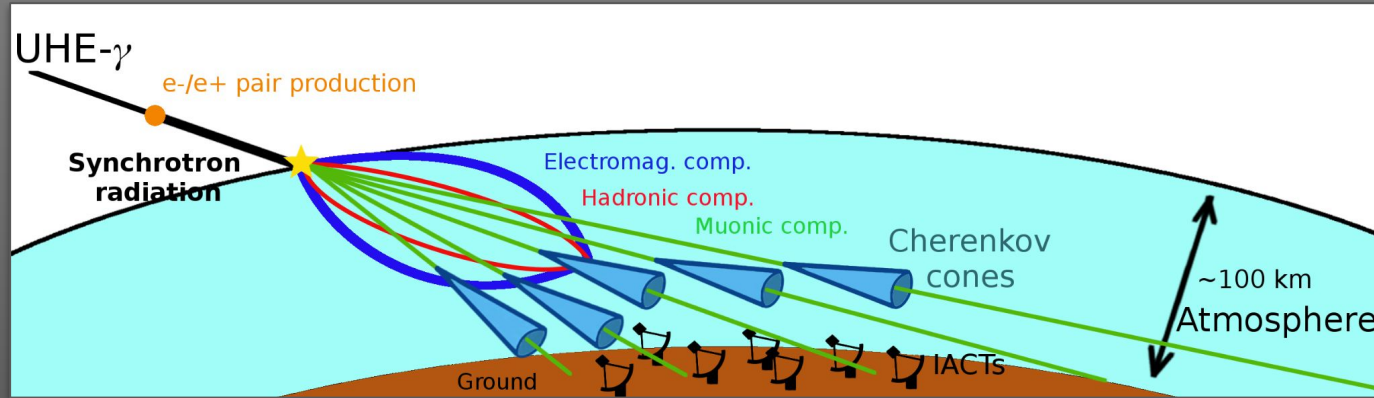


Event rates of UHE photons cascading in the geomagnetic field at CTA-North

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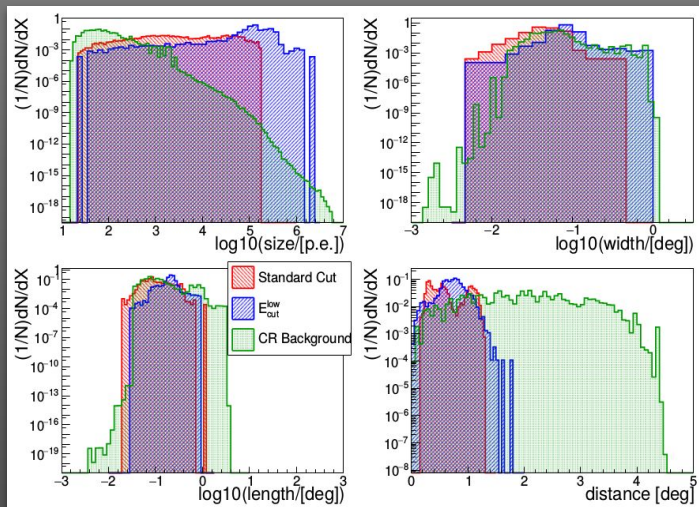
- At ultra-high energy, photon/hadron separation retrieved in **nearly-horizontal directions** for IACTs.
→ *preshower effect* must be taken into account.
- **Cherenkov light** emitted by the muonic component and recorded by IACTs.

Event rates of UHE photons cascading in the geomagnetic field at CTA-North

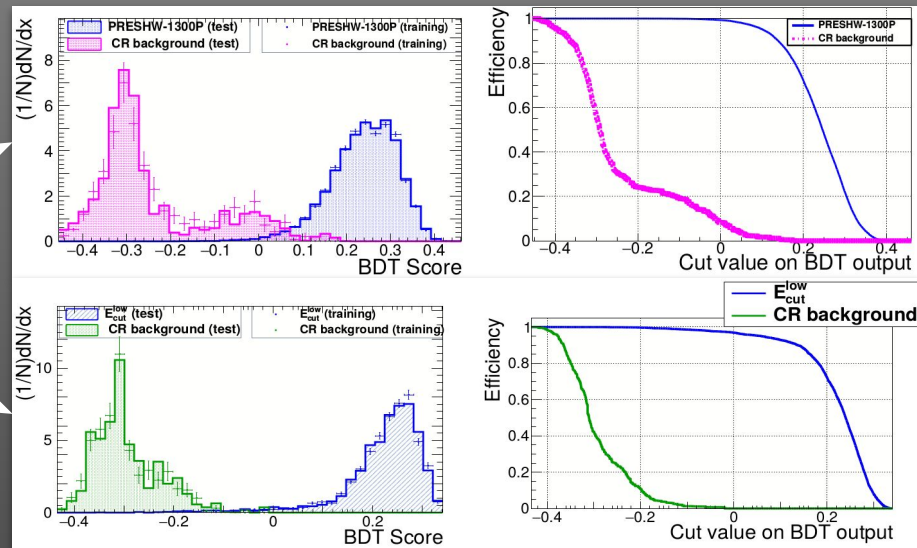
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Hillas Parameters



BDT



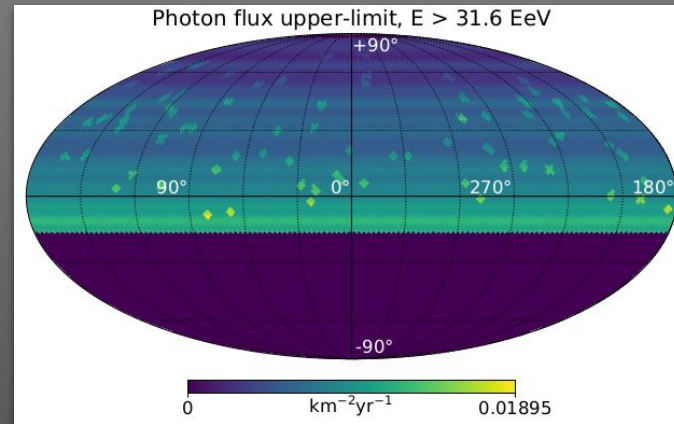
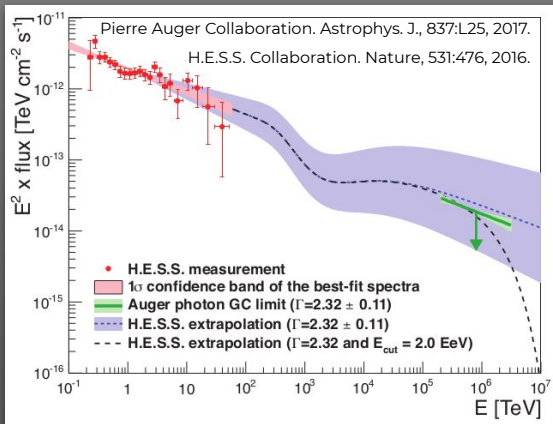
- **Hillas parameters** used to discriminate between preshower and cosmic-ray background events.

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Upper limits set by Auger (left) and TA (right)



Telescope Array Collaboration. Month. Not. Roy. Astr. Soc., 492:3984, 2020.

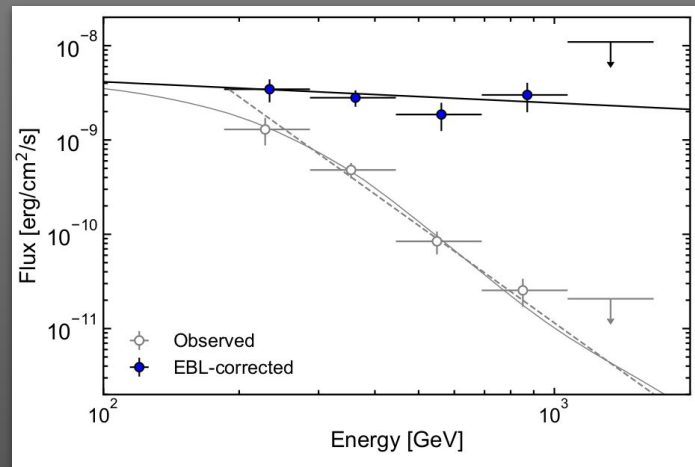
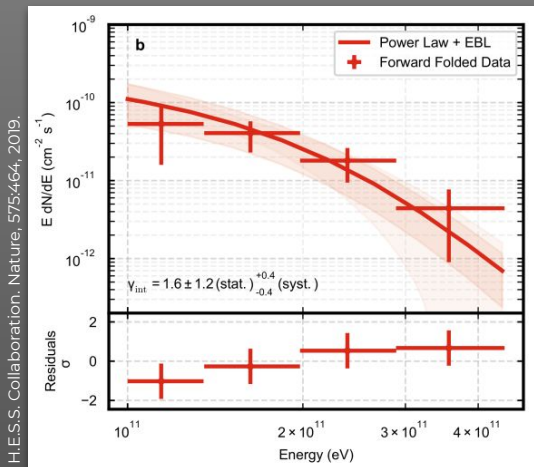
	AUGER _{point}	$\langle \text{TA}_{E>31.6 \text{ EeV}} \rangle$	$\text{max}(\text{TA}_{E>31.6 \text{ EeV}})$
$\phi_{\gamma-p.} (40 \text{ EeV}) [\text{km}^{-2}\text{yr}^{-1}]$	0.034	0.0073	0.019
$N_{\text{preshw}} - \text{non-transient} (R = 1)$	2.7×10^{-4}	5.7×10^{-5}	1.5×10^{-4}
– $R = 5$	1.4×10^{-3}	2.9×10^{-4}	7.6×10^{-4}
– $R = 652$	0.17	0.037	0.09

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GRB observations by H.E.S.S. (left) and MAGIC (right)



	AUGER _{point}	$\langle \text{TA}_{E>31.6 \text{ EeV}} \rangle$	$\text{max}(\text{TA}_{E>31.6 \text{ EeV}})$
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