On the nature of particles that produces extensive air showers with energy greater than 5 EeV

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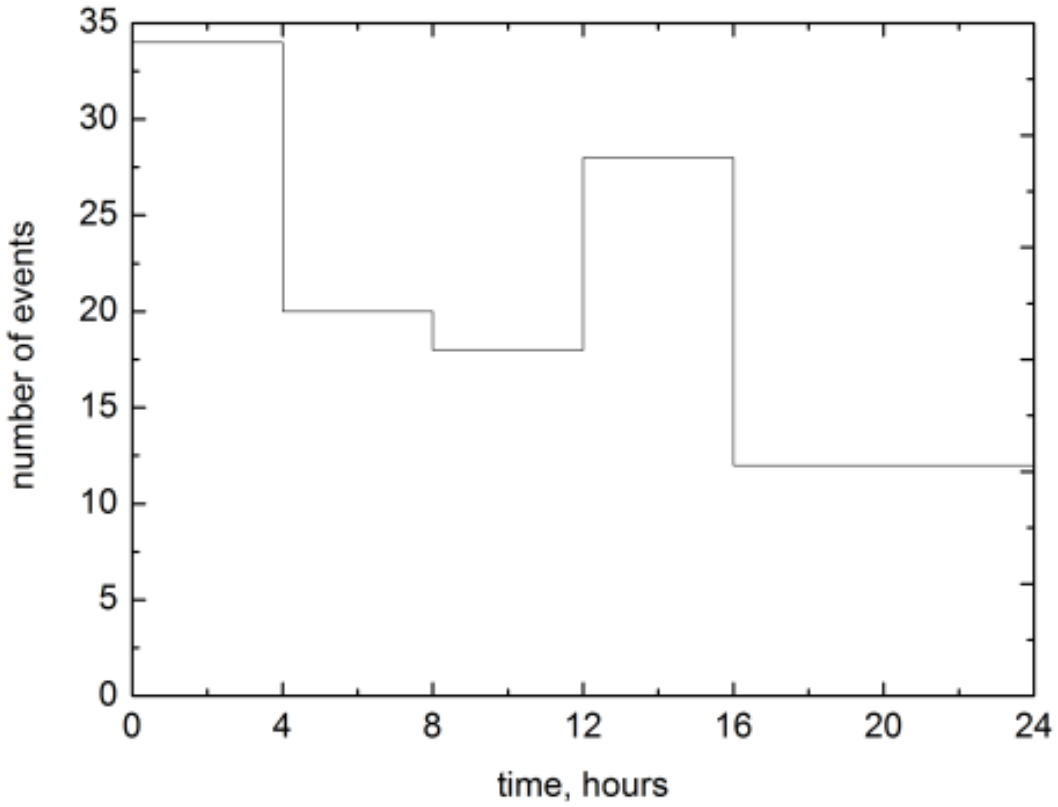
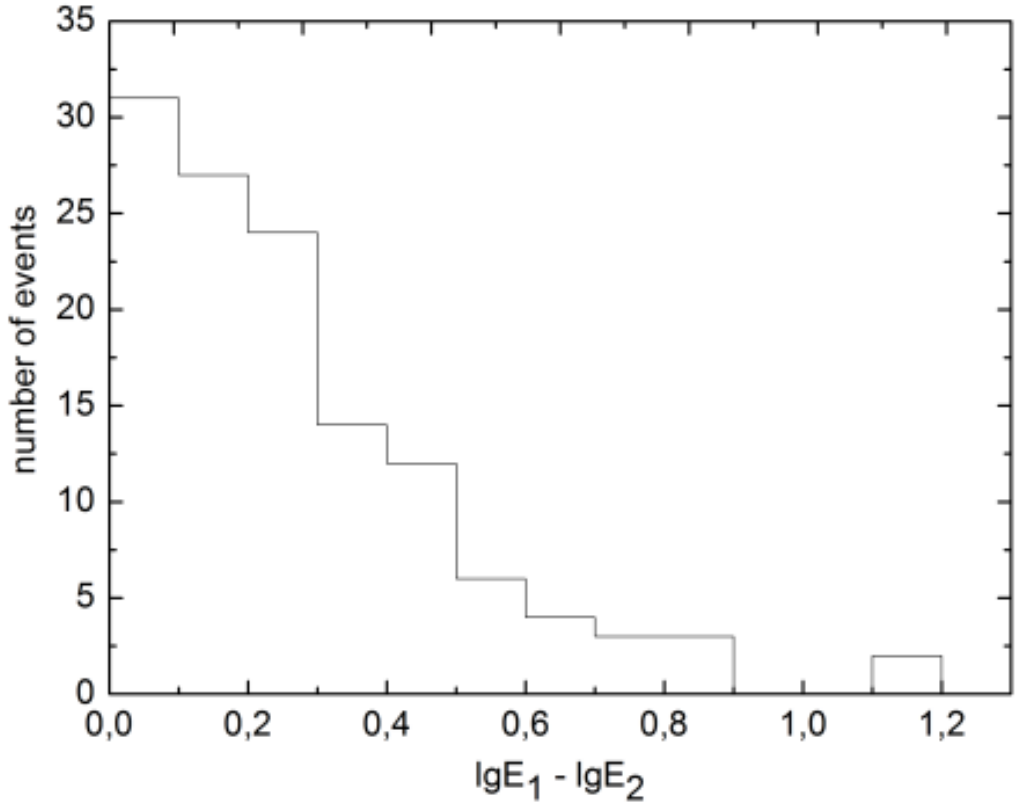
Distribution of pairs of showers



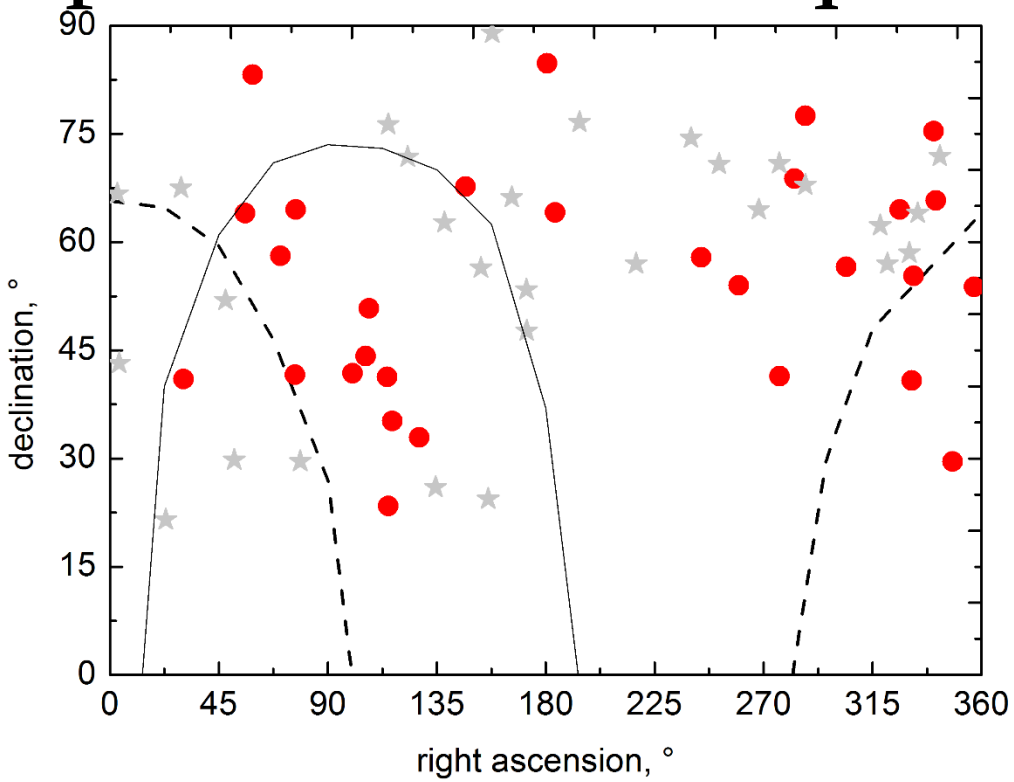
Yakutsk array data for 1995-2014

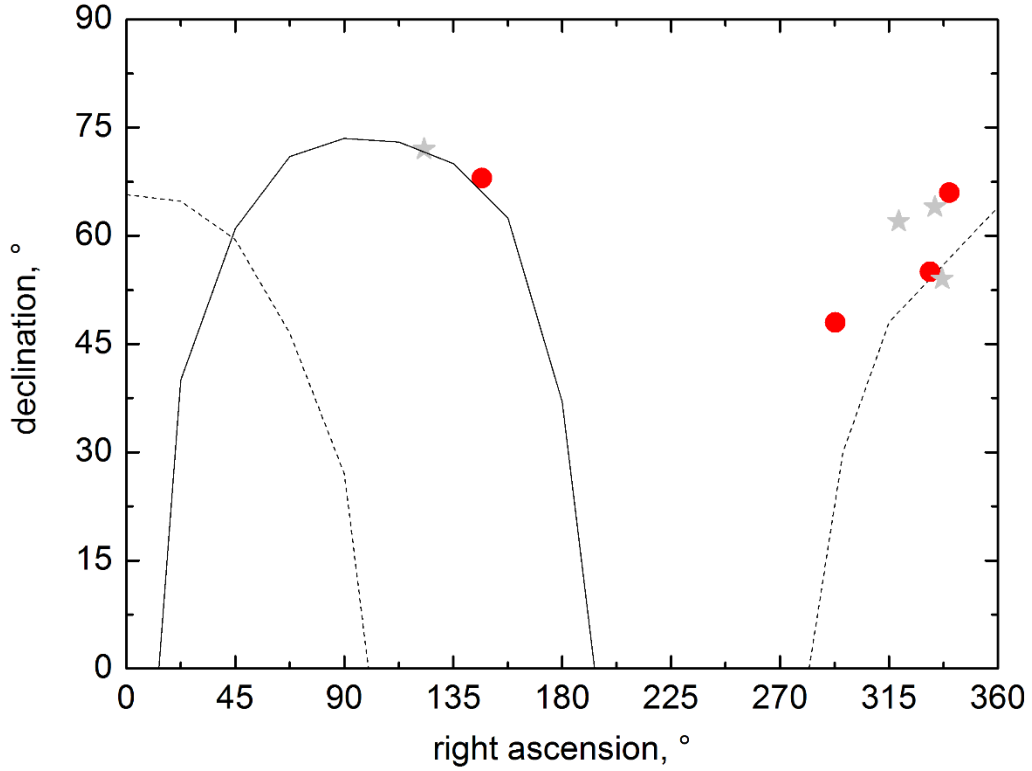
1047 air showers with energy ≥ 5 EeV



Differences between the energies of pairs of air shower events. Mean values is $\langle\Delta(\lg E_0)\rangle = 0{,}25 \pm 0{,}02$

Distribution of pairs of showers with close parameters in equatorial coordinates





Red dots – showers that arrived first

Grey stars – showers that arrived second

Dashed curve – galactic plane

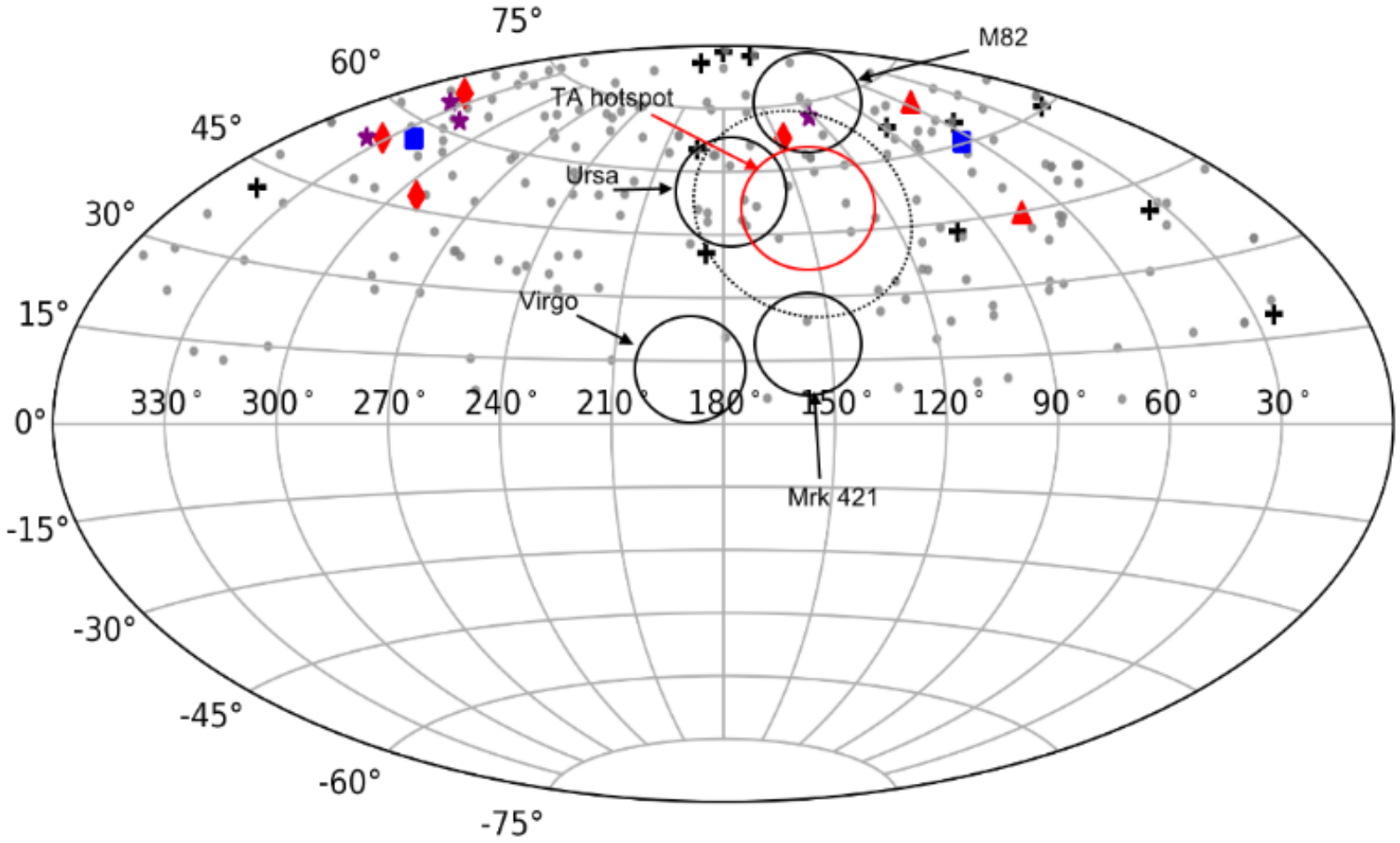
Solid curve – supergalactic plane

$\Delta T \leq 12$ h

$\Delta\theta \leq 5$ °

$\Delta E \leq 0.08$

Distribution of pairs of showers on the sky map



Diamonds and stars are showers with closest parameters; Triangles – showers with energy E~100 EeV; Squares – showers with low muon content; Crosses – air showers with E ≥ 10 EeV registered by radio antennas; Grey dots – shower pairs with E ≥ 5 EeV.