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The Very-High-Energy electron spectrum observed with H.E.S.S.

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Imaging Atmospheric Cherenkov Telescopes (IACT), which detect the Cherenkov light emitted by high energy particles in atmospheric showers, normally study the sources of very high energy gamma-rays. Cosmic electrons protons and nuclei constitute a background which needs to be reduced as much as possible using various selection techniques. But thanks to their very large effective area, IACTs can also be used to investigate the spectrum of very high energy ($E >$ 100GeV) cosmic ray electrons as a side product of observation of gamma-ray sources. Given the relatively short energy loss timescales of, in particular, the multi-TeV electrons, they provide information on relatively nearby leptonic cosmic-ray sources. We have developed a dedicated analysis able to enrich the data sample in electrons, reduce as much as possible the remaining hadronic contamination and estimate the contribution of the remaining hadronic contamination. Using an unprecedented amount of more that 3000 hours of H.E.S.S.-I observation on extragalactic sources spread over more than 10 years, more that 700 000 cosmic-ray electron candidates have been collected above 250GeV. The energy spectrum of cosmic-ray electrons measured with HESS exhibits an highly significant break around 1TeV and extends to more than one order of magnitude above the break energy. Thanks to the high collected statistics, temporal and spatial variability of the electron flux can also be investigated. Details of the developed analysis method and the resulting cosmic electron energy spectrum measured by H.E.S.S. will be presented at the conference. Implications of the measurement will be discussed.

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