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Flat spectrum radio quasars at very high energies: the new detection of PKS 1441+25

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The detection of Flat Spectrum Radio Quasars (FSRQs) in the Very High Energy (VHE, $E > 100$ GeV) range is challenging, mainly due to their steep soft spectra in this energy band. Thus far, only five FSRQs are known to be VHE gamma-ray emitters, all of which have been detected by the MAGIC telescopes, which made the first VHE detection of four of them. Observations in the VHE band are crucial to understand their emission, especially to constrain the location of the emitting region within the jet due to the absorption from their broad line region (BLR). The most recent member of the VHE FSRQ family is PKS 1441+25 ($z=0.940$) which was detected in this band for the first time by the MAGIC telescopes on April 2015. The observations were triggered by the flaring activity detected by the Fermi-LAT at High Energies (HE, $100 \text{ MeV} < E < 100 \text{ GeV}$). Aside from the gravitationally lensed VHE blazar QSO B0218+357 ($z = 0.944$), also detected by MAGIC, PKS 1441+25 is the most distant VHE blazar observed to date. For the first time, the VHE gamma-ray spectrum was used to indirectly probe the extragalactic background light at redshifts out to $z \sim 0.94$ from sensitive ground Cherenkov observations in the energy range from 40 to 250 GeV. In this contribution we will review the last results on the observations of VHE FSRQs with the MAGIC telescopes in a multi-wavelength context with special focus on the new detection of PKS 1441+25.

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