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Optical spectroscopic classification of a selection of Southern Hemisphere 3FHL unclassified blazar candidates

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The Fermi-LAT has detected more than 5000 gamma-ray sources which show emission above 50 MeV of which 58 per cent belong to the blazar class. However, the Fourth Fermi-LAT catalogue (4FGL) lists 1312 of these as blazar candidates of uncertain type (BCU). Increasing the number of classified Fermi-LAT sources is important for improving our understanding of extra-galactic gamma-ray sources and can be used to search for new classes of very high energy sources. We report on the optical spectroscopy of thirteen unclassified BCUs with hard photon indices included in the Third Catalogue of Hard Fermi-LAT Sources (3FHL) during 2016 and 2017 using the SAAO 1.9-m telescope. We were able to classify all the sources observed as BL Lac objects, and were able to calculate the redshift for three sources and potential redshift for a further three. Additionally we were able to calculate redshifts to four previously observed BL Lacs without a confirmed redshift.

Primary author: MARAIS, JP

Presenter: MARAIS, JP

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