Contribution ID : **12** Type : **not specified**

RoboPol: The optical polarization of gamma-loud and gamma-quiet blazars

Tuesday, 4 July 2017 16:18 (0:12)

Content

After a review of the robopol project and its main findings in the angle domain, we will present average R-band optopolarimetric data, as well as variability parameters, from the first and second RoboPol observing season. We investigate whether gamma-ray-loud and gamma-ray-quiet blazars exhibit systematic differences in their optical polarization proper- ties. We find that gamma-ray-loud blazars have a systematically higher polarization fraction (0.092) than gamma-ray-quiet blazars (0.031), with the hypothesis of the two samples being drawn from the same distribution of polarization fractions being rejected at the 3σ level. We have not found any evidence that this discrepancy is related to differences in the redshift distribution, rest-frame R-band luminosity density, or the source classification. The median polarization fraction versus synchrotron-peak-frequency plot shows an envelope implying that high-synchrotron-peaked sources have a smaller range of median polarization fractions con- centrated around lower values. Our gamma-ray-quiet sources show similar median polarization fractions although they are all low-synchrotron-peaked. We also find that the randomness of the polarization angle depends on the synchrotron peak frequency. For high-synchrotron-peaked sources, it tends to concentrate around preferred directions while for low-synchrotron-peaked sources, it is more variable and less likely to have a preferred direction. We propose a sce- nario which mediates efficient particle acceleration in shocks and increases the helical B-field component immediately downstream of the shock.

Summary

Primary author(s) : Dr. ANGELAKIS, Emmanouil (MPIfR)

Presenter(s) : Dr. ANGELAKIS, Emmanouil (MPIfR)

Session Classification : Session III