

# Using Convolutional Neural Networks for the Helicity Classification of Magnetic Fields

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Nicolò Oreste Pincirolì Vago,<sup>a,b,\*</sup> Ibrahim A. Hameed<sup>a</sup> and M. Kachelrieß<sup>c</sup>

<sup>a</sup>*Institutt for IKT og realfag, NTNU, Ålesund, Norway*

<sup>b</sup>*Dipartimento di Elettronica, Informazione e Bioingegneria, Politecnico di Milano, Milan, Italy*

<sup>c</sup>*Institutt for fysikk, NTNU, Trondheim, Norway*

The presence of non-zero helicity in intergalactic magnetic fields is a smoking gun for their primordial origin since they have to be generated by processes that break CP invariance. As an experimental signature for the presence of helical magnetic fields, an estimator  $Q$  based on the triple scalar product of the wave-vectors of photons generated in electromagnetic cascades from, e.g., TeV blazars, has been suggested previously. We propose to apply deep learning to helicity classification employing Convolutional Neural Networks and show that this method outperforms the  $Q$  estimator.

*37th International Cosmic Ray Conference -ICRC2021-  
15-22 July 2021  
Online – Berlin, Germany*

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\*Presenter