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# Can axion-like particles explain the alignments of the polarisations of light from quasars?

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The standard axion-like particle explanation of the observed large-scale coherent orientations of quasar polarisation vectors is ruled out by the recent measurements of vanishing of circular polarisation. We introduce a more general wave-packet formalism and show that, although decoherence effects between waves of different frequencies can reduce significantly the amount of circular polarisation, the axion-like particle hypothesis is disfavoured given the bandwidth with which part of the observations were performed. Finally, we show that a more sophisticated model of extragalactic fields does not lead to an alignment of polarisations.

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