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Electromagnetic Propagationg of Waves in Helical Stochastic REYES ADRIAN, DAVID MENDEZ, Instituto de Fisica Universidad Nacional Autonoma de Mexico — We develop a model for studying the axial propagation of elliptically polarized electromagnetic waves in a spatially random helical media. We start by writing Maxwell equations for a structurally chiral medium whose helical angle contains both a stochastic contribution and a deterministic one, this latter corresponding to an uniform rotation. We write the electromagnetic equations into Marcuvitz Schwigner representation to transform them afterward by using the Oseen transformation. We exhibit that in the Oseen frame, Marcuvitz Schwigner equations turns out to be a linear vectorial stochastic system of equations with multiplicative noise. From this result and utilizing a well known formalism for treating stochastic differential equations, we find the governing equations for the first and second moments of the field amplitudes for a general correlation model for the slope angles, and calculate their corresponding band structure for a particular spectral noise density. We show that the average resulting electromagnetic fields exhibit dissipation and the appearance of a new reflection band whose chirality is the opposite of the one obtained for a simple cholesteric liquid crystals.

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