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Constraints on the galactic magnetic field with two-point cumulative autocorrelation function YEVGENIY PETROV, Colorado State University, PIERRE AUGER COLLABORATION — The fact that ultra high energy cosmic rays are charged particles complicates identification of their sources due to deflections by the intervening cosmic magnetic fields. On the other hand, the information about the fields is encoded in the amount of deflection experienced by a charged particle. It is possible to deduce the most favorable galactic magnetic field (GMF) by examining the parameter space of different models of the GMF. I analyze arrival directions of ultra-high energy cosmic rays with energies above 50 EeV detected by the Pierre Auger observatory using two-point cumulative autocorrelation function and backtracking technique to find models of the galactic magnetic field that are compatible with statistically significant clustering on the extragalactic sky. This approach is independent from any catalog of sources. The results suggest that among several tested fields pure bisymmetric spiral disk field is favored with even vertical symmetry. Addition of the toroidal halo field further improves the focusing properties of the spiral fields and favors the field with even vertical symmetry for both bisymmetric and axisymmetric spirals. Fields with ring structure are disfavored.

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