

Abstract Submitted
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Potential “Circles in the Sky” matches for simple topologies of the Universe¹ DUSAN MALETIC, Rutgers University — If universe characteristic size is smaller than the radius of the SLS, it can intersect itself and we could observe a set of pairs of matching circles in the CMB radiation. Following the statistics proposed by Cornish, we analyze the WMAP ILC map. We apply the simplified Kp0 data mask, avoiding Galactic foregrounds. We do not consider any circles completely or partially falling within 7° of the Galactic plane or within 20° from the Galactic center. We do not average or smooth the data as the expected thickness of the circles can be estimated to be of the same order as the WMAP data resolution. By the nature of this phenomenon circles should be sharply defined. We examine statistics of the best matches for the CMB circles expected in the cases of Quaternionic, T3, Seifert-Weber and Poincare Dodecahedral topologies. We limit our search to the circles of the sizes between 8° and 16° due to the reasonable expectations related to the applied data cuts of the WMAP map and the available resolution. Due to the latter we step the matching circle coordinates during the search in the 0.5° increments as well as the circle sizes. We consider only the circles of exactly matching sizes because for the topologies considered it would not be Physical to match differently sized circles. As a result we provide circle sets most likely hinting the proposed set of possible topologies of the Universe.

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