



THE UNIVERSITY
of NORTH CAROLINA
at CHAPEL HILL

Undergraduate Research Seminar

November 7, 2023

3:00 - 4:00 p.m.

Zoom

Long range wave dependencies and cosine sign correlations

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Abstract. We'll introduce and discuss a very strange phenomenon which, approximately, says that quantum particles on nice manifolds can exhibit some very strange form of non-locality and can communicate across very large distances with each other. Do electrons on the north pole really know what electrons on the south pole are thinking? We will then simplify the problem and consider it in one dimension: there, it suddenly becomes relevant to understand how likely it is that different values of the cosine have different signs. This seems like a very simple problem which leads to some surprising and nontrivial results.