Abstract

A solenoid oscillating in vacuum will pair produce charged particles due to the Aharonov-Bohm (AB) interaction. We calculate the radiation pattern and power emitted for charged scalar particles. We extend the solenoid analysis to cosmic strings, and find enhanced radiation from cusps and kinks on loops. We argue by analogy with the electromagnetic AB interaction that cosmic strings should emit photons due to the gravitational AB interaction of fields in the conical spacetime of a cosmic string. We calculate the emission from a kink and find that it is of similar order as emission from a cusp,but kinks are vastly more numerous than cusps and may provide a more interesting observational signature.