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Calculation of the local electric field at the CNT-CNT junction in a nanocomposites[1] ETHAN SULLIVAN, TAYLOR TARLTON, Louisiana Tech Univ, PEDRO A DEROSA, Louisiana Tech Univ/Grambling State university — The use of composite materials with an insulating matrix and a conductive filler have seen intense study in recent years. The insertion of the conductive phase creates materials that can be useful for applications ranging from electromagnetic interference shielding to structural health monitoring purposes. In modeling charge transport in nanocomposties, a work assumption made by these authors (as well others) is that the electric field in all CNT-CNT junctions is the same, and assumption that may not be correct. This study looks closely at the behavior of the local electric field within the composite upon applying a voltage bias in a 3D system using finite element analysis, paying particular attention to the electric field in the CNT-CNT junction, something that has so far been neglected in the literature. Conduction in composites is controlled by the transport at those junctions and thus its characterization is required to understand the overall transport process.

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