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Oak Ridge National Laboratory is currently improving the accuracy of the RCSIM radio channel simulation by reformulating the scattering junctions that it uses to propagate a simulated radio wave. My project is to first define indexing schemes for different scattering junction connection schemes that have less numerical dispersion than the current rectilinear scheme (tetrahedral, octahedral or cubic-close packed scheme). I will then determine the average numerical dispersion for each in the case of a free-space propagation problem and, time allowing, will integrate the best scheme into the RCSIM software and show how (or if) it improves the accuracy of the model. Essentially, a function must be developed for each of the three above schemes to assign each scattering junction an integer. A second function must then be developed for each to give the neighbors of a particular junction. A simulator must then be developed and numerical experiments performed to determine the amount of dispersion error along each propagation axis. The correction factor used by the RCSIM software to determine path loss can then be found using the simulator.

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