

Linear Chain with Free End Boundary Conditions

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The problem of energy propagation through a one-dimensional open-ended finite chain is critically reexamined. Free end boundary conditions are imposed and quantum-field-theory operators, consistent with these boundary conditions, are derived for both the local and total energy current operators, avoiding the shortcomings of previous work reported on the subject. The formal treatment is illustrated through an example, and a comparison with results obtained with cyclic boundary conditions is given. © 1972 American Association of Physics Teachers. All rights reserved.