

Abstract Submitted
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**Computational Physics Education at Eastern Illinois University:
Undergraduate Curriculum and Research** JIE ZOU, Eastern Illinois University — We have recently developed a new B.S. in Physics: Computational Physics Option which offers a balanced curriculum in theoretical and experimental physics and an exposure to the computational approach in physics and engineering. Two new courses have been developed: “Computational Methods in Physics and Engineering” and “Computational Physics”. Undergraduate research with an emphasis on computation is also an integral part of this curriculum. One research area that we have introduced to our students is the computational modeling and simulation of nanoscale materials. An example is a project that involved phonon dispersion in nanoscale heterostructures, which students obtained by solving the lattice wave equation using the Finite-Difference method. An ongoing undergraduate project involves applying Molecular Dynamics Simulation to the study of the random motion and kinetic theory of gases. In this paper, we present details on our Computational Physics curriculum and the above computational projects. We also analyze the educational benefits that the Computational Physics curriculum and research projects bring to our students.

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