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Abstract for an Invited Paper
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Computational Physics as a Path for Physics Education¹

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Evidence and arguments will be presented that modifications in the undergraduate physics curriculum are necessary to maintain the long-term relevance of physics. Suggested will a balance of analytic, experimental, computational, and communication skills, that in many cases will require an increased inclusion of computation and its associated skill set into the undergraduate physics curriculum. The general arguments will be followed by a detailed enumeration of suggested subjects and student learning outcomes, many of which have already been adopted or advocated by the computational science community, and which permit high performance computing and communication. Several alternative models for how these computational topics can be incorporated into the undergraduate curriculum will be discussed. This includes enhanced topics in the standard existing courses, as well as stand-alone courses. Applications and demonstrations will be presented throughout the talk, as well as prototype video-based materials and electronic books.

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