



The Abdus Salam
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for Theoretical Physics**



**School in Computational Condensed Matter Physics:
From Atomistic Simulations to Universal Model Hamiltonians**

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**ATOMISTIC COMPUTER SIMULATIONS:
Past, Present and Future**

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Abstract:

The rapid development of computer technology and namely algorithms have had deep impact on science. Of particular significance has been the emergence of realistic atomistic simulation. These calculations provide precious insight, replace difficult experiments and predict new phenomenon. Yet in spite of remarkable progress much remain to be done to widen the scope of atomistic simulation, especially in the fields of nanotechnology and biosciences. This require extending the time and length scale of the system studied. Even more challenging is the need to find appropriate tools to describe and tame the complexity of the systems of current interest.