Computational Materials Physics

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If one had a great calculating machine, one might apply it to the problem of solving the Schrödinger equation for each metal and obtain thereby the interesting physical properties, such as the cohesive energy, the lattice constant, and similar parameters. It is not clear, however, that a great deal would be gained by this. Presumably the results would agree with the experimentally determined quantities and nothing vastly new would be learned from the calculation. (Eugene Wigner and Frederick Seitz, 1955). In computational physics one does exactly what our two heroes discourage, and not only does one learn a great deal, one is also able to design materials with specific properties.