

apoma Laboratory of Condensed Matter and Theoretical Physics

Magurele-Bucharest



Marian Apostol

Marian Apostol is professor of Theoretical Physics in the Institute of Atomic Physics, Magurele-Bucharest, Romania. He got his PhD in the same institute in 1984 and works there as scientific researcher, where he is now running the **apoma Laboratory of Condensed Matter and Theoretical Physics**. His research interests include condensed matter, atomic, nuclear, solid-state, materials, chemical and mathematical physics. He has published over 200 papers in these areas, 8 postgraduate monographs, textbooks, and founded and is currently editing and publishing the **Journal of Theoretical Physics** (<http://archive.theory.nipne.ro>).

Condensed Matter Theory Group at Magurele-Bucharest

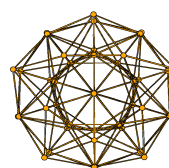


apoma Laboratory of Theoretical Physics

The group is interested and active in:
Low-dimensional quantum gases and liquids, Electronic correlations, Phase transitions, Charge- and spin-density waves, High-temperature superconductors, Fullerenes, Atomic clusters, Mesoscopic systems, Magnetic field-related phenomena, Non-linear phenomena, Transport phenomena, Quantum mechanics of molecules, Defects, disorder and modulated structures,

Quantum correlations, non-equilibrium phenomena and quasi-classical behaviour, Waves in guiding structures and special geometries, Statistical physics and Mathematical Physics, Nanostructures, Spin transport, Surfaces, Magnetism

In **apoma Lab** participate 2 professors, 6 researchers, 2 PhD students, and it has several open post-doc and PhD positions. More information can be found at <http://www.theory.nipne.ro/CMP>



A metallic cluster of 45 atoms in ground-state

Atomic Clusters and Nanostructures

Matter aggregation at atomic level has been pursued recently, in order to get quantitative physical and chemical information about clusters and nanostructures from first principles. This was partially attained by the quasi-classical solution to Hartree-Fock equations. We may know at this moment equilibrium geometric forms, ionic positions, inter-ionic distances, ground-states and isomers, magic numbers, vibration spectra, etc for a large variety of homo-atomic metallic clusters, both isolated and deposited on surfaces, with a reasonable accuracy.

Recent Publications

1. *Ground-state energy and geometric magic numbers for homo-atomic metallic clusters*, L. C. Cune, M. Apostol, Phys. Lett. **A273** 117 (2000).
2. *Iron-hydrocarbon cluster $Fe_{13}(C_2H_2)_6$* , L. C. Cune, M. Apostol, Chem. Phys. Lett. **344** 287 (2001).
3. L. C. Cune, M. Apostol, *Metallic Binding*, apoma, MB (2001).

For additional information please contact Marian Apostol at email: apoma@theory.nipne.ro