

Statistical measures applied to metal clusters: evidence of magic numbers

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(Submitted on 4 Feb 2010)

In this work, a shell model for metal clusters up to 220 valence electrons is used to obtain the fractional occupation probabilities of the electronic orbitals. Then, the calculation of a statistical measure of complexity and the Fisher-Shannon information is carried out. An increase of both magnitudes with the number of valence electrons is observed. The shell structure is reflected by the behavior of the statistical complexity. The magic numbers are indicated by the Fisher-Shannon information. So, as in the case of atomic nuclei, the study of statistical indicators also unveil the existence of magic numbers in metal clusters.

Comments: 7 pages, 3 figures

Subjects: **Atomic and Molecular Clusters (physics.atm-clus)**; Pattern Formation and Solitons (nlin.PS); Data Analysis, Statistics and Probability (physics.data-an)

Cite as: [arXiv:1002.1043v1](#) [physics.atm-clus]

Submission history

From: Ricardo Lopez-Ruiz [[view email](#)]

[v1] Thu, 4 Feb 2010 17:37:06 GMT (51kb)

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