Special Issue

Atomic Structure Calculations of Complex Atoms

Message from the Guest Editor

It is known that actinide atoms and similar (lanthanides, super heavy elements) multivalence atoms and low-Z ions present a significant challenge to atomic structure theories. First of all, multiple-valence electrons lead to complex high-density spectra and strong mixing of configurations, especially in higher excited states. Second, valence electrons interact with the core electrons, and this further complicates matters since it is not sufficient to consider valence electrons in isolation. Third, there are also significant effects of relativity [1], so LS coupling, which helps in classification and calculations of transitions, is not very accurate in many cases. The classification of terms is one important task, and Cowan-code based approaches [2] have been fairly successful. Multiple adjustable parameters have been used to achieve the difference between theory and experiment on the order of tens of inverse cm. However, pure semi-empirical approaches can be deficient, and if the model is not correct, various properties of atoms can be predicted with large deviations [...]

Guest Editor

Dr. Igor Mykhaylovych Savukov
Los Alamos National Laboratory, Los Alamos, NM 87545, USA

Deadline for manuscript submissions

closed (30 September 2021)

Atoms

an Open Access Journal by MDPI

Impact Factor 1.5
CiteScore 3.1

mdpi.com/si/46217

Atoms
Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
atoms@mdpi.com

mdpi.com/journal/atoms

Atoms

an Open Access Journal by MDPI

Impact Factor 1.5
CiteScore 3.1

mdpi.com/journal/atoms

About the Journal

Message from the Editor-in-Chief

The scope of *Atoms* is deliberately wide and encompasses a large part of theoretical and experimental atomic,
molecular, nuclear, and chemical physics in order to encourage cross-disciplinary connections, while supporting the more traditional idea of individual subfields. The journal is also interested in papers concerning
the computation and compilation of data related to applications in the above areas. Details of experimental methods and codes are welcome. Your research is taken seriously and peer-reviewed with care. I encourage you
to contact me or any of the Editorial Board Members for further information.

Editor-in-Chief

Prof. Dr. Pascal Quinet
1. Physique Atomique et Astrophysique, Université de Mons, B-7000 Mons, Belgium
2. IPNAS, Université de Liège, B-4000 Liège, Belgium

Author Benefits

Open Access

— free for readers, with article processing charges (APC) paid by authors or their institutions.

High Visibility:

indexed within Scopus, ESCI (Web of Science), Astrophysics Data System, Inspec, CAPlus / SciFinder, INSPIRE, and other databases.

Journal Rank:

CiteScore - Q2 (Nuclear and High Energy Physics)

MDPI