Cornell University Library

We gratefully acknowledge support from the Simons Foundation and member institutions

arXiv.org > nucl-th > arXiv:1101.0392

Search or Article-id (Help | Advanced search) All papers Go!

Nuclear Theory

# Temeprature-dependent Seeger's liquid drop energy for nuclei up to Z=118

BirBikram Singh, Manoj K. Sharma, Raj Kumar, Manie Bansal, Raj K. Gupta

*(Submitted on 2 Jan 2011)*

Seeger's semi-empirical mass formula is revisited for two of its constants (bulk constant {\alpha}(0) and neutron-proton asymmetry constant a_{a}) readjusted to obtain the ground-state (g.s.) binding energies of nuclei within a precision of <1.5 MeV and for nuclei up to Z=118. The aim is to include the temperature T-dependence on experimental binding energies, and not to obtain the new parameter set of Seeger's liquid drop energy VLDM . Our proceedure is to define the g.s. binding energy B = V_{LDM} + {\delta}U, as per Strutinsky renormalization procedure, and using the empirical shell corrections {\delta}U of Myers and Swiatecki, fit the constants of V_{LDM} to obtain the experimental binding energy Bexpt or theoretically calculated Btheo if data were not available. The T-dependence of the constants of V_{LDM}, is introduced as per the work of Davidson et al., where the pairing energy {\delta}(T) is modified as per new calculations on compound nucleus decays. The newly fitted constants of V_{LDM} at T=0 are made available here for use of other workers interested in nuclear dynamics of hot and rotating nuclei.

Comments: 16 Pages, 4 figures, 1 Table
Subjects: **Nuclear Theory (nucl-th)**
Cite as: **arXiv:1101.0392 [nucl-th]**
(or **arXiv:1101.0392v1 [nucl-th]** for this version)

## Submission history

From: Dr. BirBikram Singh [view email]
**[v1]** Sun, 2 Jan 2011 09:24:35 GMT (110kb)

*Which authors of this paper are endorsers?*

Link back to: arXiv, form interface, contact.

## Download:

- PDF
- PostScript
- Other formats

Current browse context:
**nucl-th**
**< prev | next >**
new | recent | 1101

References & Citations
- INSPIRE HEP (refers to | cited by)
- NASA ADS

Bookmark(what is this?)