

## Comparisons between HULLAC-v9, MBPT-RCI, FAC and NIST energies and radiative transition properties for Be-, C-, N- and Ne- like ions

Dominique GILLES<sup>1</sup>, Michel BUSQUET<sup>2</sup> and Marcel KLAPISCH<sup>3</sup>

1) *CEA/IRFU/Sap & CEA/IRAMIS/LYDIL, 91191, Gif-sur-Yvette, France*

*E-mail: Dominique.gillesl@cea.fr*

2) *Research Support Instruments, Lanham, MD 20706, USA*

3) *Berkeley Research Associates, Beltsville, MD 21042, USA*

HULLAC-v9 atomic opacity code [1] allows user to select different schemes of Configuration Interaction in spectral opacity calculations. However in HULLAC-v9 a Parametric Potential method is used for both bound and free orbitals and different strategies of potential optimization can be selected. We shall present in this poster the sensitivity, to these options, of HULLAC-v9 spectral opacity lines energies and transition rates. Results for Be-, C-, N- and Ne-like ions will be compared to MBPT-RCI, FAC and NIST previously published calculations presented in [2, 3, 4, 5, 6, 7].

### References

- [1] M. Busquet, A. Bar-Shalom, M. Klapisch, J. Oreg, J. Phys. IV **133**, 973 (2006); M. Busquet, M. Klapisch, Bull. American Phys. Soc. **55**, 225 (2010); A. Bar-Shalom, J. Oreg, M. Klapisch, J. Quant. Spectrosc. Radiat. Transfer **65**, 415 (2000)
- [2] K. Wang, X.L. Guo, H.T. Liu & al, ApJS, **218**,16 (2015)
- [3] K. Wang, D.F. Li, H.T. Liu & al, ApJS, **215**, 26 (2015)
- [4] K. Wang, R. Si, W. Dang & al, ApJS, **223**, 3 (2016)
- [5] K. Wang, Z.B. Chen, R. Si & al, ApJS, **226**, 14 (2016)
- [6] M. F. Gu, Can. J. Phys. , 86, 675 (2008)
- [7] NIST Kramida, A., Yu, R., & Reader, J.NIST ASD Team 2014, NIST Atomic Spectra Database (version 5.2; Gaithersburg, MD: NIST), <http://physics.nist.gov/asd>