

Abstract Submitted
for the DAMOP09 Meeting of
The American Physical Society

Lifetimes of Metastable 2^3S_1 States of Heliumlike Ions GORDON DRAKE¹, PAUL MOFFATT, University of Windsor — The lifetime of the 2^3S_1 state of helium is unusually long. This property is useful in astrophysical observations of nebulae to determine their temperature and density conditions. Calculations of relativistic magnetic dipole (M1) transitions, including corrections to the magnetic dipole transition operator, are performed and the lifetimes for the metastable 2^3S_1 state are evaluated. These decay rates for heliumlike ions have been calculated by Drake [1]. The present work provides an update to the calculations using significantly larger basis sizes in the calculation, yielding more accurate results. M1 decay rates are presented for all the heliumlike ions through the isoelectronic sequence up to Fe XXV. These results can be compared with measurement by Moos and Woodworth [2], and the electron beam ion trap results tabulated by Träbert [3].

[1] G.W.F. Drake, Phys. Rev. A **3**, 3 (1971).

[2] H.W. Moos and J.R. Woodworth, Phys. Rev. A **12**, 2455 (1975).

[3] E. Träbert, Can. J. Phys. **86**, 73 (2008).

¹Supported by NSERC and SHARCNET

Gordon Drake
University of Windsor

Date submitted: 23 Jan 2009

Electronic form version 1.4