

## C60<sup>+</sup>- looking for the bucky-ball in interstellar space

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### Abstract

© 2016 The Authors. The laboratory gas-phase spectrum recently published by Campbell et al. has reinvigorated attempts to confirm the presence of the C 60 + cation in the interstellar medium, through an analysis of the spectra of hot, reddened stars. This search is hindered by at least two issues that need to be addressed: (i) the wavelength range of interest is severely polluted by strong water-vapour lines coming from the Earth's atmosphere; (ii) one of the major bands attributed to C 60 + , at 9633 Å, is blended with the stellar MgII line, which is susceptible to non-local thermodynamic equilibrium effects in hot stellar atmospheres. Both these issues are carefully considered here for the first time, based on high-resolution and high signal-to-noise ratio echelle spectra for 19 lines of sight. The result is that the presence of C 60 + in interstellar clouds is brought into question.

<http://dx.doi.org/10.1093/mnras/stw2948>

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### Keywords

ISM: clouds, ISM: lines and bands, ISM: molecules

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