

## **Part II Astrophysics Essay 2021**

### **How many parents had our Sun?**

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Chemical elements are created in many environments, starting at the Big Bang, then in a variety of spallation and stellar sources, each with its own range of timescales and pattern of element creation. These include supernovae of at least two types (I and II), products of stellar evolution from old stars, exotic sources - merging neutron stars - and the range of possible r- and s- process sources. Collating the range of origins of the chemical elements in a Sun-like star provides a window on the range of astrophysical processes which lies in our past.

### **Suggested references**

Battistini & Bensby 2016, *Astronomy & Astrophysics*, 586 49  
Bedell M., et al., 2018, *Astrophysical Journal*, 865, 68  
Bensby & Lind 2018 *Astronomy & Astrophysics* 615 151  
Battistini C., & Bensby T., 2015, *Astronomy & Astrophysics*, 577, 9  
Hartwig, T., et al., 2018 *Monthly Notices of the Royal Astronomical Society*, 478, 1795.  
Magrini et al, *Astronomy & Astrophysics*, 617 41  
Meynet G., et al., *Proceeding of the IAU Symposium 2018* 334 170;  
Ritter, C., et al., 2018, *Astrophysical Journal Supplement*, 237, 42.  
Roederer, I.U., et al., 2018, *Astrophysical Journal*, 865 129