

light-curve, a Monte Carlo model of planetesimal belts in wide stellar binaries was created. It found that the occurrence rate of KIC 8462852-like observations in the *Kepler* field is  $10^{-8}$  and hence that the probability of the *Kepler* telescope observing such phenomena to be  $10^{-3}$ . It also found that the systems most likely to be observed have planetesimal belts at  $10^2$ – $10^3$  AU, stellar companions at  $10^2$ – $10^4$  AU, stellar masses of  $\geq 1 M_\odot$  and ages of  $10^2$ – $10^3$  Myrs. Therefore, despite being in the right age range and with a companion at the right distance, it is unlikely that the EKM caused by the companion star is the cause of these observations.

This thesis then followed the surface-density evolution of three narrow debris discs, as well as one wide disc, with a stellar companion at  $a_{\text{comp}} = 878$  AU and an inclination of  $88^\circ$ . It found that the EKM imprinted a petal-shaped structure on the narrow discs due to the disc particles librating between a fixed set of values for the longitude of pericentre which depend only on the initial inclination. As the evolution of the wide disc is the superposition of the evolution of the three narrow discs, these petal structures combined to produce an X-shaped structure. ‘Thermal emission’ images were then produced for the wide disc to see if the X-shaped structure would be observable. It was found that, as the tips of the structure corresponding to the apocentres of eccentric orbits were more dense, they dominate the thermal emission and the structure appears as four ‘clumps’. The time evolution of the fractional luminosity and flux at 5 and 12  $\mu\text{m}$  for these discs was then calculated. The fractional luminosity did not vary by more than an order of magnitude as it was dominated by distant cold dust and hence this mechanism cannot explain the high values of fractional luminosity associated with extreme debris discs. Likewise, whilst the infrared flux at 5 and 12  $\mu\text{m}$  does increase by orders of magnitude to  $\approx 10^{-4}$ , it is not high enough to explain the brightest exozodi like  $\eta$  Corvi or  $\beta$  Leo, though it could explain fainter exozodi. — *University of Cambridge; accepted 2024 June.*

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### Here and There

#### THE OLDEST CITIES?

... mega-flood from the North Sea when the land bridge from Dover in England to Calais in France collapsed.  
—Paul Murdin, *The Universe: A Biography* (Thames & Hudson), p. 230.