Asteroid Belt Found around Vega

Kate Su, G. Rieke, R. Malhotra, K. Misselt (University of Arizona) Karl Stapelfeldt (NASA/GSFC), A. M. Hughes (Berkeley), A. Bonsor (IPAG), D. Wilner (CfA), Z. Balog (MPIA), D. Watson (Rochester), M. Werner (NASA/JPL)
Vega and its Dusty Debris Ring

Vega, 5\textsuperscript{th} brightest star in the sky, 25 light years away in the constellation Lyra.

Vega was known to have a cold debris ring, discovered by the Infrared Astronomical Satellite (IRAS) in 1984.

A very large, cold debris ring, full of small dust particles formed by the smashing of cometary bodies was found by \textit{Spitzer in 2005}. 

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summer triangle

Vega

Lyra
Vega’s Asteroid-belt-like Ring

In addition to the cold ring, new spectra from *Spitzer* and images from *Herschel* show that Vega also has an inner warm debris ring, at a similar temperature to that which dust in our asteroid belt would have.
Debris Disk Twins: Vega and Fomalhaut

Vega and Fomalhaut are similar in many ways:
Both are A-type stars (~2 times more massive and ~20-30 times more luminous than our sun) at a similar distance (~25 light years).
Both now have inner warm and outer cold belts!
Implication from the Structure of Vega’s Debris Disk

A large gap is a signpost that points to multiple planets.
Implication from the Two-Belt Debris Systems

Vega System

Fomalhaut System

HR 8799 System

Low-mass planets are more numerous than massive ones. Multiple-planet systems are common beyond our sun.