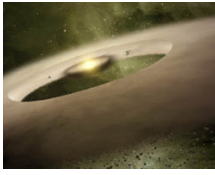


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By: Gabriel Gache, Science News Editor



Artistic impression of the UX Tau A solar system  
University of Michigan

## [UX Tau A: Youngest Solar System](#)

### *Solar system formation*

UX Tau A is now considered the youngest solar system ever discovered to date. The system is located in a region of sky about 450 light years away in the Taurus constellation that provides conditions for new star formation. By using images provided by the NASA's Spitzer Space Telescope, taken during star observations, astronomers at the University of Michigan noticed gaps in the protoplanetary disks of gas spinning around these stars, which might be evidence of protoplanets cleaning that area of debris. The previous infrared observations regarding these gaps have been interpreted by the astronomers, as a result of the photoevaporating process interacting with the surrounding material, meaning the gas cloud is heated up until evaporated and then dissipated. However, the UX Tau A and LkCa 15 systems do not present holes seen in the previous observations, but gaps which is clear evidence of planet-like structures interacting with the disk gas, since the photoevaporating process does not create such patterns. The UX Tau A star and LkCa 15 are relatively young and represent pre-main sequence stars. Our Sun is a main sequence star, meaning it is an average adult that is fueled by nuclear fusion reactions that 'burn' hydrogen into helium. So far these young stars that are about one million years old haven't been able to establish the conversion process yet and produce energy only by gravitational contraction. The Spitzer Space Telescope operates in the infrared light spectrum, meaning the optical telescopes are not able to observe these specific wavelengths. By using the emission from these pre-main sequence stars, astronomers are able to observe a solar system forming process, virtually looking back in the history of our own solar system, which by comparison has a middle-aged Sun of about 4.5 billion years old. The study has been made by professor Nuria Calvet from the University of Michigan and will be published on a paper by astronomy doctoral student Catherin Espaillat in the December 1st issue of the *Astrophysical Journal Letters*.