

February 21, 2008

Tea: 3:30pm, Campbell Hall Lounge

Colloquium: 4:00pm, 1 Le Conte

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An Asteroid Breakup 160 My Ago as the Probable Source of the K-T Impactor

The terrestrial and lunar cratering rate is often assumed to have been nearly constant over the last 3 Gy. Different lines of evidence, however, suggest the impact flux from kilometer-sized bodies increased by at least a factor of 2 over the last ~100 My. Here we report that this apparent surge was triggered by the catastrophic disruption of the Baptistina parent body, a ~170 km diameter carbonaceous chondrite-like asteroid that broke up 160 +30 -20 My ago in the inner main belt. Numerous fragments produced by the collision were slowly delivered by dynamical processes to orbits where they could strike the terrestrial planets. Using numerical simulations to model this asteroid shower, we find it is the most likely source (>90% probability) of the Chicxulub impactor that produced the Cretaceous-Tertiary (K/T) mass extinction event 65 My ago.