

## Comets as collisional fragments of larger planetesimals

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Comets are often thought of as “pristine planetesimals”. However, most cometary objects that we study are just a few km in size. Planetesimals this small are highly unlikely to be pristine planetesimals. In fact, the collisional environment in the trans-Neptunian planetesimal disk was very severe both before and during the giant planet instability phase that formed and sculpted the current comet reservoirs (the scattered disk and the Oort cloud). Km-size planetesimals had no chance to survive intact this collisional phase. Thus, the comets that we observe should be regarded as collisional fragments of larger planetesimals, like NEAs are regarded as collisional fragments of larger asteroids. The primitive character of comets is just a myth.

**Auteur principal:** Dr MORBIDELLI, alessandro (OCA)

**Orateur:** Dr MORBIDELLI, alessandro (OCA)

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