



## On the Origin of the Saturnian Ring Systems

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Based on the earlier radar and the recent Cassini measurements it can be considered proven that Saturn - contrary to the other three giant planets - has *two* ring systems of independent origin. The dust rings came into existence similarly to those of other giant planets - that is by the dusting of the inner moons. The ice ring system (the B+A ring) takes its origin by fragmentation of a captured Kuiper belt object. The two ring systems evolve independently from each other, but interact as the dust particles meet with the icy chunks and make them dusty.

The fragmentation and the dispersion started to happen not too long ago in a favoured position, where the B ring is the brightest on the lit side, but darkest and coldest on the unlit side. Moreover the disintegration and the spreading are continuing even today as the icy ring system is not evenly bright and not evenly dirty (the A ring is dirtier since there are more dusting small moons). At the distance of the disintegration the ice ring system is many-particle-thick - as is demonstrated by the dark and cold unlit side of the B ring. Near the edges, however, the ring can be of monolayer type. Therefore, it is supposed that a single component model cannot describe the Saturnian ring systems, neither in composition nor in layer type.