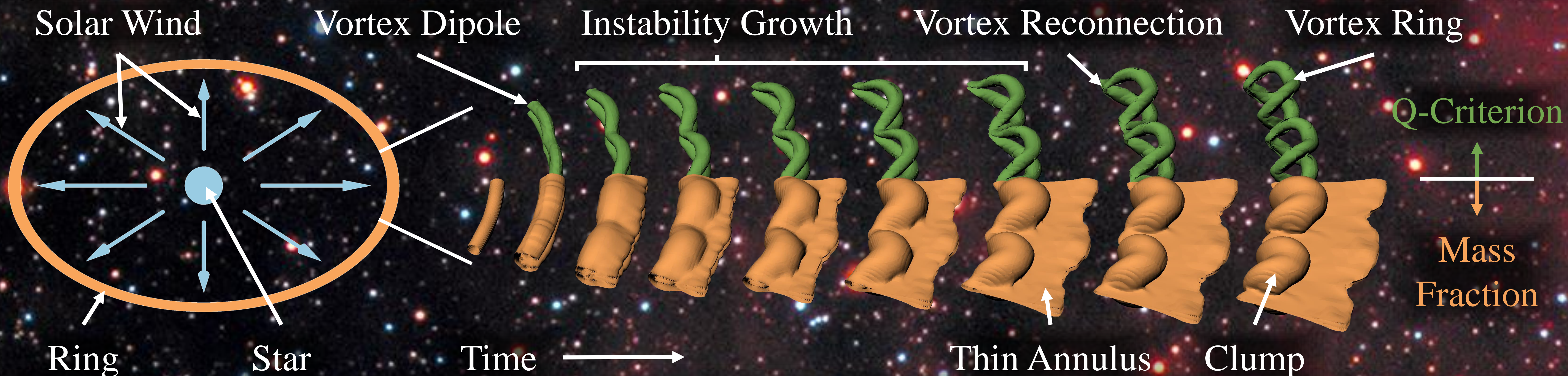


Airplane-Wake Dynamics in Supernova Remnants

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The origin of the clumps along the gaseous circumstellar ring surrounding the remnant of Supernova 1987A has puzzled scientists for decades. Twenty-thousand years prior to the supernova, the interaction between solar wind from the progenitor star and the ring likely generated vorticity conducive to the formation of a circular vortex dipole subject to the cylindrical Crow instability, as shown above. Our analysis predicts a dominant unstable wavenumber consistent with the number of clumps, and simulations reproduce both the clumping behavior and the thin annulus of mass, shed by the vortex dipole, recently observed with the James Webb Space Telescope, as shown below.

