Observational evidence of morphological quenching in dusty elliptical galaxies

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The mechanism by which galaxies stop forming stars and get rid of their interstellar medium (ISM) remains elusive. I will present analysis and results obtained on a sample of more than two thousand elliptical galaxies in which dust emission has been detected. This is the largest sample of such galaxies ever analysed. One of the main result is the timescale for removal of dust in these galaxies and its dependency on physical or environmental properties. This timescale does not depend on environment, stellar mass or redshift. Another interesting result is a departure of dusty elliptical galaxies from the star formation rate vs. dust mass relation. This is caused by the star-formation rates declining faster than the dust masses and indicates that there exists an internal mechanism, which affects star formation, but leaves the ISM intact. Morphological quenching together with ionisation or outflows caused by older stellar populations (supernova type Ia or planetary nebulae) are consistent with these observations.