

# Combustion of hadronic stars into quark stars: the turbulent and the diffusive regimes

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The conversion of a hadronic star into a quark star occurs within two different regimes. The first regime, characterized by turbulent combustion, occurs on very short time scales (of the order of ms) and it is decoupled from the neutrino cooling. In the second regime, turbulence is not active anymore, and the conversion proceeds, on a much longer time scale (of the order of tens of seconds), via diffusion and production of strange quarks. At the same time, neutrino cooling is also active. The interplay between the slow conversion of the outer part of the star and the cooling of the newly forming quark star leads to a plateau in the neutrino luminosity which, if observed, would possibly represent a unique signature for the existence of quark matter compact stars.

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