

# The centre of the Milky Way

*Tuesday 4 June 2024 11:45 (20 minutes)*

I will give an introduction to the structure and dynamics of the central 3 kpc of the Milky Way. This region hosts a complex star-forming ecosystem that is continually exchanging matter with the rest of the Galaxy through inflows and outflows. The Galactic bar efficiently transports gas from the Galactic disc towards the centre at a rate of  $\sim 1 M_{\odot}/\text{yr}$ , creating a ring-like accumulation of molecular gas known as the Central Molecular Zone (CMZ) at a radius  $R=120\text{pc}$ . The CMZ is the local analog of the star-forming nuclear rings commonly found at the centre of external barred galaxies, and forms by a process similar to the one that creates gaps in Saturn's rings. Once in the ring, approximately 10% of the gas is consumed by its intense star formation activity. Star formation does not occur uniformly throughout the CMZ ring, but is more likely to occur near the sites where the bar-driven inflow is deposited. The star formation rate of the CMZ varies as a function of time, but it is currently debated whether this is due to an internal feedback cycle or to external variations in the bar-driven inflow rate. The radius of the CMZ gas ring slowly grows over Gyr timescales, and its star formation activity builds up a flattened stellar system known as the nuclear stellar disc, which currently dominates the gravitational potential of the Milky Way at  $30\text{pc} < R < 300\text{pc}$ .

## sessioni congresso

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**Primary author:** SORMANI, Mattia

**Presenter:** SORMANI, Mattia

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