## **Annual Scientific Meeting & Harley Wood School**



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## Probing Omega Centauri for an Accreting IMBH: Stringent constraints from radio observations

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Omega Centauri is the largest and most massive globular cluster in the Milky Way. Due to its size and complex evolution, it has long been considered a promising candidate for hosting an intermediate-mass black hole (IMBH). Recent findings from fast-moving stars in the central region of Omega Cen indicate the presence of a large amount of unseen mass at the core of this cluster. We present results from 172 hours of deep radio observations with the Australia Telescope Compact Array (ATCA) to search for signatures of accretion from a putative IMBH. Our data reaches an unprecedented radio luminosity level of  $~10^{2}6$  erg/s, making this the most sensitive radio image of Omega Centauri. Despite this depth, we do not detect radio emissions from a suspected IMBH at any of the photometric centers proposed in previous studies. Our finding indicates that either Omega Centauri is unlikely to host an IMBH with mass > 1000 solar mass or that any existing black hole is accreting at an extremely low rate.

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