

Low-frequency radio observations of recurrent nova RS Ophiuchi with MeerKAT and LOFAR

Wednesday, 17 May 2023 13:15 (1 minute)

We report low-frequency radio observations of the 2021 outburst of the recurrent nova RS Ophiuchi. These observations include the lowest frequency observations of this system to date. Detailed light curves are obtained by MeerKAT at 0.82 and 1.28 GHz and LOFAR at 54 and 154 MHz. These low-frequency detections allow us to put stringent constraints on the brightness temperature that clearly favour a non-thermal emission mechanism. The radio emission is interpreted and modelled as synchrotron emission from the shock interaction between the nova ejecta and the circumbinary medium. The light curve shows a plateauing behaviour after the first peak, which can be explained by either a non-uniform density of the circumbinary medium or a second emission component. Further modelling of the light curves allows us to constrain the red giant mass loss rate. Radio emission from stellar wind or synchrotron jets are ruled out as the possible origin of the radio emission. Finally, we suggest a strategy for future observations that would advance our understanding of the physical properties of RS Oph.

Primary author: DE RUITER, Iris (Anton Pannekoek Institute/University of Amsterdam)

Presenter: DE RUITER, Iris (Anton Pannekoek Institute/University of Amsterdam)

Session Classification: Poster Prizes & closing