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## Simulating the radio emissions of dark matter for new high-resolution observations with MeerKAT

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Recent work has shown that diffuse radio observations by MeerKAT - and eventually the SKA - are well suited to provide some of the strongest constraints yet on dark matter annihilations, particularly in dwarf spheroidal galaxies. To make full use of the observations by these facilities, accurate simulations of the expected dark matter abundance and diffusion mechanisms in these astrophysical objects are required. However, because of the computational costs involved, various mathematical and numerical techniques have been developed to perform the calculations in a feasible manner. Here we present a comparison of the various methods commonly used, outlining the applicability of each one, while also demonstrating a novel technique for the solution of the diffusion equation. These considerations are becoming ever more important as the hunt for dark matter continues, especially in this new era of precision radio observations.

### Apply to be considered for a student ; award (Yes / No)?

Yes

### Level for award;(Hons, MSc, PhD, N/A)?

PhD

### Consent on use of personal information: Abstract Submission

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