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## **Detecting dark matter signals by radio data of galaxy clusters**

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Dark matter problem is a key problem in astrophysics. Recent gamma-ray and anti-proton detections suggest that dark matter annihilating via b quark channel can explain the Galactic center gamma-ray excess and the anti-proton excess simultaneously. Besides, recent studies show that radio data can also give stringent constraints for dark matter. Based on our recent studies using the radio continuum spectral data of the Ophiuchus cluster and the Abell 4038 cluster, we have figured out some potential signals of dark matter annihilation. The constrained mass range ( $\sim 40$ -50 GeV) and annihilation channel (b quark) are consistent with the previous studies. This provides some hints for detecting dark matter signals by radio observational data.

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