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Abstract:

The nature of dark matter particles is still unknown, and among various speculated particles, WIMPs and axion are two most popular well-motivated candidates. On the one hand, electrons and positrons, produced from WIMPs annihilation, could produce radio emissions by synchrotron radiation in the presence of reasonably strong magnetic fields. On the other hand, axion could spontaneously decay into two photons in the radio band of FAST. After analyzing the 2-hours data of the previous proposal PT2020_0121, the preliminary result shows a very strong constraint for the WIMP property, especially for the lepton final states. Thus we propose to undertake another 14-hours observation of the dwarf spheroidal galaxy, Coma Berenices, which is a dark matter dominated object without significant astrophysical emission, to further constrain the property of dark matter, especially for the b quark final state. Our observation would give a strong constraint for WIMP and may test the WIMP annihilation scenario for the well-known Galactic Center Excess. And this could also lead to complementary limits for the axion coupling constant as a by-product.