

Light milli-charged dark matter and the origin of large scale cosmic fields.

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A mechanism for generation of large scale magnetic fields at recombination epoch is considered. Due to rotation of a protogalaxy a circular electric current can be generated because of interaction of galactic electrons with hypothetical light dark matter particles possessing a small electric charge. The induced current may be sufficiently strong to create the observed magnetic field at galactic and intergalactic scales without much dynamo amplification. Additionally, angular momentum transfer from the rotating gas to dark matter could change the dark matter profile and suppress formation of cusps at galactic centers.

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