

Galactic Magnetism with SKA:

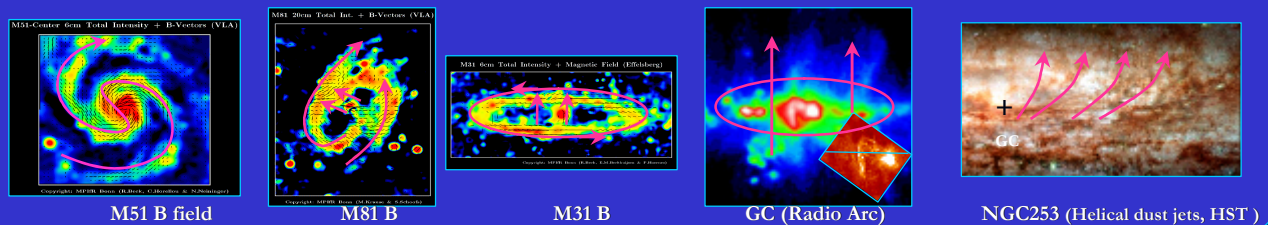
Primordial Origin of BSS, ASS, Ring & Vertical Fields

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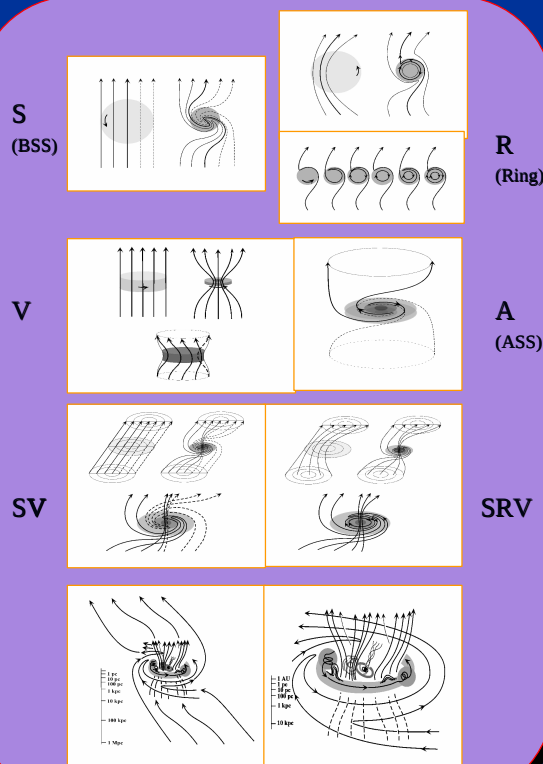
Abstract

Observations indicate S (BSS, bisymmetric Spiral), A (ASS, axisymmetric), R (Ring) fields in the disk, and V (Vertical) field in the center, which accelerates cosmic jets. The magnetic topology is explained as the fossil of large scale primordial field wound up during the galaxy formation. 3-D MHD simulations well reproduce these field configurations. In order to clarify the primordial-origin scenario, we propose high-resolution and sensitivity Faraday mapping of magnetic fields in spiral galaxies, especially the connection of S, A, R to the central V field.

1. Observations: S, A, R, V fields in spiral galaxies (a)

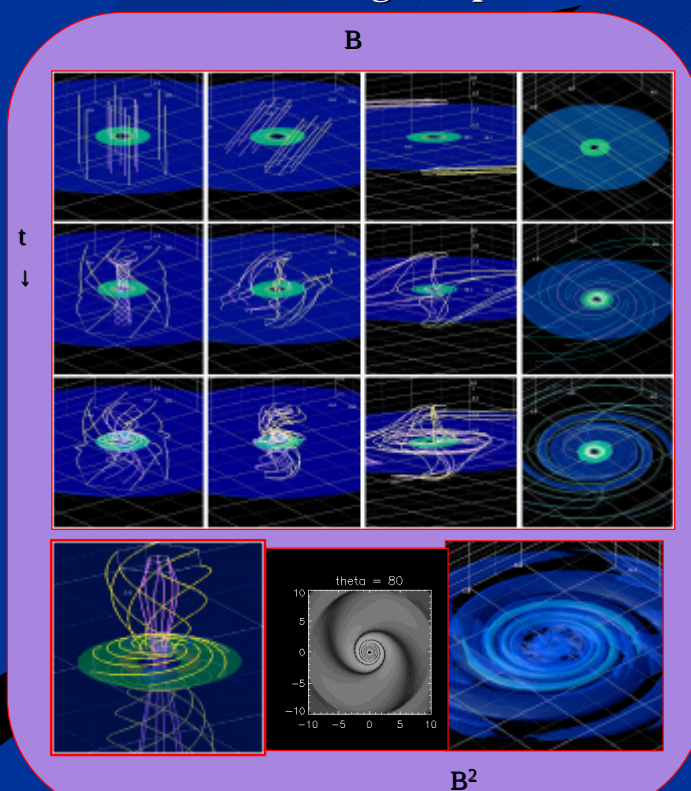


2. Primordial origin for S, A, R, & V fields (b,c)



3. Three-D MHD Simulation (c)

$i=0, 45, 89, 90$ deg, 10 kpc disk



References: (a) Beck's url, Sofue's url; (b) Sofue et al. 1986 ARAA 24, 459; (c) Sofue et al. 2009 in prepa.