Jackie Villadsen (NRAO CV)

Radio Emission from the Global Magnetosphere of a Young M Dwarf

Young M dwarfs can have global magnetic dipole fields hundreds of times stronger than the dipole component of the Sun's magnetic field. As a result, while closed magnetic structures on the Sun are mostly small features that lie close to the solar surface, young M dwarfs are likely have large closed magnetic structures with length scales comparable to the size of the star. I will present VLA and VLBA observations of a rapidly-rotating young M dwarf, UV Ceti that produces periodic bursts of radio emission, which punctuate quiescent emission from an area of roughly 3x2 stellar diameters surrounding the star. These results suggest that UV Cet has a large-scale closed magnetic field that is populated with energetic particles. These particles radiate in processes which have no analog on the Sun but bear resemblance to processes on brown dwarfs and Jupiter.