Abstract Submitted
for the MAS20 Meeting of
The American Physical Society

Imaging Spectroscopy of CME-Associated Solar Radio Bursts SHERRY CHHABRA, DALE GARY, Center for Solar Terrestrial Research, New Jersey Institute of Technology, GREGG HALLINAN, MARIN ANDERSON, California Institute of Technology, BIN CHEN, Center for Solar Terrestrial Research, New Jersey Institute of Technology, LINCOLN GREENHILL, Harvard-Smithsonian Center for Astrophysics, DANIEL PRICE, Centre for Astrophysics Supercomputing, Swinburne University of Technology — We present first results of a solar radio event observed with the Owens Valley Radio Observatory Long Wavelength Array (OVRO-LWA) at metric wavelengths. We examine a complex event consisting of multiple radio sources/bursts associated with a fast coronal mass ejection (CME) and an M2.1 GOES soft X-ray flare from 2015 September 20. We present our results from the investigation of the radio event, focusing particularly on one burst source that exhibits outward motion, which we classify as a moving type IV burst. The event is imaged at multiple frequencies and source centroids are used to obtain the velocity for the outward motion. Spatial and temporal comparison with observations of the CME in white light from the LASCO(C2) coronagraph, indicates an association of the outward motion with the core of the CME. By performing graduated-cylindrical-shell (GCS) reconstruction of the CME, we constrain the density in the volume. Based on low density for plasma emission, source height and smoothness of the emission in frequency and time, we argue that gyrosynchrotron is the more plausible mechanism. We use gyrosynchrotron spectral fitting techniques to estimate the evolving physical conditions during the outward motion of this burst source.

Sherry Chhabra
New Jersey Inst of Tech

Date submitted: 02 Nov 2020 Electronic form version 1.4