High-resolution Observation of Moving Magnetic Features in Active Regions QIN LI, NA DENG, JU JING, HAIMIN WANG, New Jersey Inst of Tech — Moving magnetic features (MMFs) are small photospheric magnetic elements that emerge and move outward toward the boundary of moat regions mostly during a sunspot decaying phase, in a serpent wave-like magnetic topology. Studies of MMFs and their classification (e.g., unipolar or bipolar types) strongly rely on the high spatiotemporal-resolution observation of photospheric magnetic field. In this work, we present a detailed observation of a sunspot evolution in NOAA active region (AR) 12565, using exceptionally high resolution Hα images from the 1.6m New Solar telescope (NST) at Big Bear Solar Observatory (BBSO) and the UV images from the Interface Region Imaging Spectrograph (IRIS). The spectropolarimetric measurements of photospheric magnetic field are obtained from the NST Near InfraRed Imaging Spectropolarimeter (NIRIS) at Fe I 1.56 μm line. We investigate the horizontal motion of the classified MMFs and discuss the clustering patterns of the geometry and motion of the MMFs. We estimate the rate of flux generation by appearance of MMFs and the role MMFs play in sunspot decaying phase. We also study the interaction between the MMFs and the existing magnetic field features and its response to Ellerman bombs and IRIS bombs respectively at higher layers.

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