Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Non-reciprocal Bands by Symmetry Breaking in One-way Magnetized Plasmonic Double Chain System CHI WAI LING, KIN HUNG FUNG, The Hong Kong Polytechnic University — Non-reciprocity is a key component to provide one-way propagation in one dimensional (1D) optical waveguides, which enables applications like isolators and switches. Plasmonic chains, formed by spatial periodic metal nanoparticles, are subwavelength 1D optical waveguides. Coupled plasmon modes on the chains are characterized by dispersion relation $\omega(k)$, in which k is the wave vector. It has been shown that the spectral reciprocity $\omega(-k) = \omega(k)$ can be protected by either time reversal (T) or inversion (P) symmetry. However, breaking of (P) and (T) symmetries are not sufficient to achieve $\omega(-k) \neq \omega(k)$. We use a magnetized plasmonic double chain system to show that breaking pi-rotation time-reversal (RT) symmetry is also a necessary condition.

Chi Wai Ling
The Hong Kong Polytechnic University

Date submitted: 10 Nov 2014 Electronic form version 1.4