Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

In-plane directivity of a plasmonic wireless communication system JUAN M. MERLO, MICHAEL J. BURNS, MICHAEL J. NAUGHTON, Department of Physics, Boston College, Chestnut Hill, Massachusetts 02467, USA. — On-chip communication is important for many future technologies. While present information transfer rates are high enough to perform some communication, there remain barriers to overcome. We recently reported the first nanoscale wireless communication system (nWCS) driven by plasmonic antennas in the visible spectrum that can perform communication faster than present on-chip technologies [1]. Toward optimizing this system to improve performance, antenna directivity is one of the most important parameters, since this influences transfer efficiency. Here, we report directivity measurements on an nWCS using visible light. Our findings are consistent with antenna theory, and suggest that manipulation of the polarization of incident light is important in order to obtain maximum directivity. Also, due to the plasmonic nature of the antennas, fabrication defects have important impact on the in-plane emitted signal, affecting the overall performance of the system. Finally, we suggest alternative designs for such plasmonic antennas [2]. [1] J.M. Merlo, *et al.* Sci. Rep. 6, 31710; doi: 10.1038/srep31710 (2016). [2] J.M. Merlo, *et al.* (manuscript in preparation).

Juan M. Merlo
Department of Physics, Boston College, Chestnut Hill, Massachusetts 02467, USA.

Date submitted: 11 Nov 2016 Electronic form version 1.4