Supplementary Information to

Control and Near-Field Detection of Surface Plasmon Interference Patterns

Petr Dvořák,[†,‡] *Tomáš Neuman,*[†,‡] *Lukáš Břínek,*[†,‡] *Tomáš Šamořil,*[†,‡] *Radek Kalousek*[†,‡], *Petr Dub*[†,‡], *Peter Varga*[†,‡], *and Tomáš Šikola*[†,‡,]*

[†]Institute of Physical Engineering, Brno University of Technology, Technická 2, Brno 616 69, Czech Republic

[‡]CEITEC BUT, Technická 10, 616 69 Brno, Czech Republic

Email: sikola@fme.vutbr.cz

Distribution of the magnetic field in SPP interference patterns

In Figure 1 the distribution of the magnetic field of a simulated SPP interference pattern for the laser beam polarization in the direction of the square diagonal (four-slit experiment) and at the height 10 nm above the surface is shown.

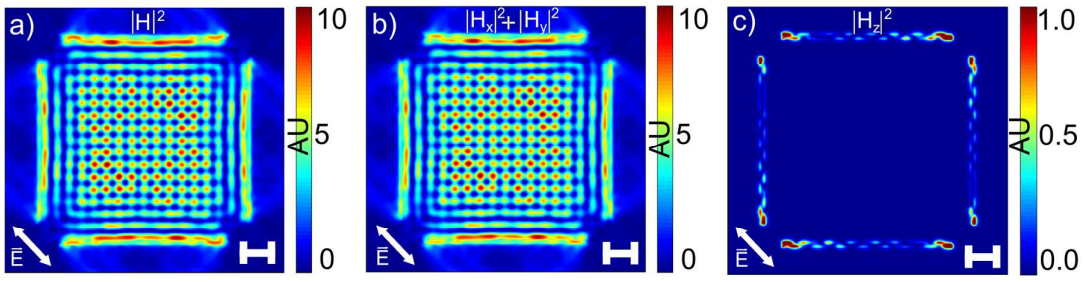

Fig. 1. Distribution of the magnetic field of the simulated SPP interference pattern (four-slit experiment). The double arrow shows the direction of the laser beam polarization.

From the figures it is obvious that the magnetic field has nonzero components only in the *x*-*y* plane. The reason for that is that the incident laser beam possesses the TM polarization for both surface plasmon propagation directions (*x* and *y*) and so only the electric field of SPPs can have a nonzero out-of-plane component (*z* direction). It is also in agreement with the paper of Aigouy et al. [23] where, however, only one propagation direction is available (double slit experiment).