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Title: Two-dimensional optics : diffraction and dispersion of surface plasmons
Issue Date: 2013-05-22
Propositions
to be defended along with the dissertation
TWO-DIMENSIONAL OPTICS

I
The topological charge of an optical field distribution in a transverse plane is distinct from the expectation value of the orbital angular momentum per photon, except in axial symmetry.

This thesis, chapter 3

II
Two nanoslits on a gold film could be used as a wavefront sensor with much higher spatial resolution than the commonly-used Shack-Hartmann sensor.

This thesis, chapter 4

III
The damping of a driven oscillator, and the conductivity of the metal in surface plasmon resonance, cause similar displacements of their maximum response.

This thesis, chapter 5

IV
It is a misconception that the Otto configuration for studying surface plasmon resonances only causes difficulties.

This thesis, chapter 5

V
The temporal cloaking device will need to be paired with extremely slow light if it is to hide an event from human eyes.


VI
Walking droplets are a good illustration of pilot wave theory at a macroscopic scale.


VII
There is an advantage to cheap c c d cameras’ lack of an infrared filter: one can use a laptop or mobile phone to check if one’s t v remote is still working.
VIII
There is a correlation between an object’s color and the degree of polarization of the light it scatters.


IX
The data cloud could have been developed forty years ago, had it not been for the baby boomers’ distrust of centralization.


X
One can use a laser pointer to probe a cat’s mechanical excitation states and their eigenfrequencies.


XI
Scientists who don’t trust students’ possibly clumsy hands on their research should work at a research institute instead of at a university.

Philip F. Chimento
March 7, 2013