Stellingen

behorend bij het proefschrift

*Light Scattering by Photonic Crystals with a Dirac Spectrum*

1. The transmitted photon current at the Dirac point of a photonic crystal is inversely proportional to the crystal length.
   
   Chapter 2

2. A triangular lattice photonic crystal attaches a spin-$\frac{1}{2}$ to the photon.
   
   Chapter 4

3. The extinction of coherent backscattering predicted for ultrarelativistic electrons has a photonic analogue.
   
   Chapter 5

4. The Goos-Hänchen shift of a beam upon total internal reflection can be observed as a conductance step of $8e^2/h$ in a graphene bipolar junction.
   
   Chapter 6

5. The “optical clepsydra” introduced by Tsakmakidis et al. is more properly called “optical hourglass”.

   K. L. Tsakmakidis, A. D. Boardman, and O. Hess,
   
6. The common attribution of the Goos-Hänchen shift to Newton is inappropriate, since he got the sign wrong.

   I. Newton, *Opticks* (London, 1730)

7. The surmise by Akkermans et al. that the Fano factor depends on the fractal dimension of a conductor is unfounded.

   E. Akkermans, G. V. Dunne, and A. Teplyaev, arXiv:0903.3681

8. The photon dynamics in the Lévi glass of Barthelemy et al. differs markedly from a Lévy flight because of finite-size effects.


9. The amount of irrationality in science is underestimated.

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   Leiden, 20 May 2009