Reformulation of Sonja’s equations

Anders, Sonja and I agreed that Eqs 11, 13, 30, 33, 36, 38 and 40 in Sonja’s notes are those that we shall use in the future.

I would like to propose a small reformulation

(A1)

The advantage is that 1, and are of the same size, cf. figure below (where legend S1 should be red S1\* and similar for S2). So the overall dependence on N becomes explicit.



With this

(A2)

Note that the latter expression refers to the relevant optical properties: the physical aperture Y, the length L=NT of the lens, and the linear attenuation coefficient µ.

Likewise for Eq 33:

One additional problem with this is that D^2 is larger than 1 and fphi is not very physical. Therefore I would prefer

(A3)

It directly follows that for large d1/().

The expression for AC-B2 can be simplified:

= .

From this follows from Eq 34 a new expression for :

=

(A4)

Or

Again the latter expression refers to the relevant optical properties: the physical aperture Y, the lenght L=NT of the lens, and the linear attenuation coefficient µ, and the refractive index.

The equations A1, A3 and A4 are transferred to dark field microscopy paper. Equation A2 doesn’t get a number in order not to screw up the numbering, but is in the text.