Re: Depth of Focus Formula

Source: http://sci.tech−archive.net/Archive/sci.optics/2005−02/0352.html

---

From: Johannes Swartling (*johannes.swartling_at_home.se*)
Date: 02/25/05

Date: Fri, 25 Feb 2005 17:24:59 −0000

"W. Watson" <wolf_tracks@invalid.inv> wrote in message
news:0CbTd.4592$873.2453@newsread3.news.pas.earthlink.net...
> I'm looking at a formula for depth of focus on a web site, and it shows
*> equation depth−>subscript of(diffraction) is equal to the 1.22*wavelength*
> divided by the sine squared of a half angle (Where the sine argumentis the
> half angle subtended by the lens as seen from either the object or image
> plane). Anyone know where the formula came from? Perhaps someone of
> historic merit derived it? Where can I find a description or reference to
> it?

sine squared of half angle = NA squared, which is how you usually see it written. Depth of field is obviously a somewhat arbitrary quantity and you see different variations on the formula for it depending on the preferences of the person who came up with it. These equations are used for high NA microscope objectives. For low NA microscope objectives and for photography the depth of field is normally defined using geometrical optics, based on the circle of confusion.

Johannes