

# Re: Turbulence and diaphragm

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- *From:* [brian@xxxxxxx](mailto:brian@xxxxxxx) (Brian Tung)
  - *Date:* Tue, 2 Jan 2007 12:20:38 -0800 (PST)
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Mitch Alsup wrote:

A Gaussian Aperture is a mask that sits on the front of a telescope that reduces the amount of light entering the outer edges of the telescope. Ideally the limits resemble a Gaussian curve (Bell curve). In practice, one only needs to reduce the light at the very edge of the aperture by 60% (40% of the light remains) to get a good effect. This gets rid of the Point-Spread function effects on the airy disk and gives a nice clean spot without diffraction rings.

It does *\*not\** get rid of the PSF. (I know you didn't mean that, but the original poster might not.) What it does is eliminate the dark gaps in the PSF that lead to rings. It also makes the PSF somewhat more compact and generally dimmer (as you've noted). Compact, good; dimmer, bad. But possibly not so bad, depending on the application.

A true Gaussian mask leads to a Gaussian PSF, I think. But any physical mask is stopped by the aperture, which leads to some non-Gaussianness in the PSF. This discrepancy is generally small enough to ignore, especially in larger telescopes (where turbulence effects dominate).

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