Subject: Poisson Noise
Posted by M. Katz on Sat, 12 Mar 2011 00:54:09 GMT

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I'm wondering if anyone has a ready-made Poisson-noise simulator for images that works in the following way.

Start with a simulated ideal image as input, where each pixel contains a number of photons as the intensity. It could be integer or floating-point. Then use a function P(img) to return a Poisson-noise-added version of the image. The key is that noise at each pixel scales with the intensity appropriately, and not uniformly.

For large numbers of photons, where the Poisson noise has an RMS of Sqrt(N) and behaves like a Gaussian distribution, I could just add noise to img1 like this

img2 = 0L > ROUND(img1 + RANDOMN(seed, Nx, Ny)*SQRT(img1))

But for low photon numbers, this approximation isn't valid.

Thanks,
M.

Subject: Re: Poisson Noise
Posted by pgrigis on Tue, 15 Mar 2011 14:28:13 GMT

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On Mar 11, 8:54 pm, "M. Katz" <MKatz...@yahoo.com> wrote:
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> But for low photon numbers, this approximation isn't valid.
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> Thanks,

> M.

IDL has a built-in way too:

a=randomu(seed,poisson=10.0)

Ciao,
Paolo