Forumlas for stochastic analyses

Eric Thrane

Important formulas for stochastic analyses.

I. ISOTROPIC ANALYSES

If $P_I(f)$ is the measured auto-power in detector I (and the window factor is already taken into account), then

$$\Omega_{\rm GW}(f) = \frac{10\pi^2 f^3}{3H_0^2} P(f). \tag{1}$$

Here H_0 is the Hubble constant. In this result we used this formula for the average antenna factor product:

$$\epsilon_{II} = \frac{1}{2}\sum_A \frac{1}{4\pi}\int d\hat{\Omega} F_I^A(\hat{\Omega}) F_I^A(\hat{\Omega}) = \frac{1}{2}\frac{1}{4\pi}\frac{8\pi}{5} = \frac{1}{5}. \tag{2}$$