Number of Pixels in Beam Area - Calculation

- Equation from NRAO ASTR 354 - Interferometers2 Document
  - "The beam solid angle of a Gaussian beam with HPBW θ_0 is":

$$\Omega_A = \frac{\pi * {\theta_0}^2}{4 * ln(2)}$$

  - My equation for Ω_A using θ_0 = 31":

$$\Omega_A = \frac{\pi * (31\ arcsec)^2}{4 * ln(2)} \approx 1089\ arcsec^2$$

  - Pixel Area Calculation (using CDELT from FITS header)

$$CDELT^2 = (.002444\ \frac{deg}{pixel} * 3600\ \frac{arcsec}{deg})^2 = 77.42\ \frac{arcsec^2}{pixel}$$

$$\downarrow$$

$$\frac{\Omega_A}{CDELT^2} = \frac{1089\ arcsec^2}{77.42\ \frac{arcsec^2}{pixel}} \approx 14\ pixel$$