ltk-mw_center_lens_photon_sieve cals

1 $c \equiv 299792458 \cdot \frac{1\ \mathrm{m}}{1\ \mathrm{s}}$

2 $frequency \equiv 10.525\ \mathrm{GHz}$

3 $\lambda \equiv \frac{c}{frequency}$

4

Focal distance:

5 $f \equiv 70\ \mathrm{mm}$

Where to place the center of the holes:

6 $\mathrm{r_n}(n) \equiv \sqrt{(2 \cdot n \cdot \lambda \cdot f + n^2 \cdot \lambda^2)}$

Where are the classical FZP transitions: (useful for center pinhole

7 $\mathrm{r_{nfresnel}}(n) \equiv \sqrt{(n \cdot \lambda \cdot f + \frac{n^2 \cdot \lambda^2}{4})}$

Correction factor to increase holes diameter. This can be calculated, but for now i'll take 1.53 for granted (from "Photon sieve space telescope", Andersen, Dearborn, McHang)

8 $c_f \equiv 1.53$

Zone width for the Nth bright zone. In our case, this is also the diameter of the hole.

9 $\mathrm{w_n}(n) \equiv \frac{\lambda \cdot f}{2 \cdot \mathrm{r_n}(n)} \cdot c_f$

The number of holes, separated by a fixed distance: (relative width makes more beautiful drawings)

10 $SpacingMethod \equiv$ ○ Use fixed spacing
● Use relative width spacing

11 $holes_{sep} \equiv 3\ \mathrm{mm}$

12 $holes_{sepP} \equiv 1$

13 variable name ≡ **mixture**

14 mass or moles of No substance Specified

15 variable name ≡ **mixture**

16 mass or moles of No substance Specified

17 **if** $SpacingMethod = 0$

18 $\mathrm{N_{holes}}(n) \equiv round\left(3.14 \cdot \frac{2 \cdot \mathrm{r_n}(n)}{\mathrm{w_n}(n) + holes_{sep}}\right)$

elseif $SpacingMethod = 1$

19 $N_{holes}(n) \equiv round\left(3.14 \cdot \frac{2 \cdot r_n(n)}{w_n(n) + w_n(n) \cdot holes_{sepP}}\right)$

end

20

21 **fusion 360**

end