关于超表面周期的选择

1. 可以按照公式

$$\frac{\lambda}{2n_{衬底}} < P < \frac{\lambda}{n_{衬底}}$$

其中P是周期，λ是波长
公式参见论文《Silicon Nitride Metalenses for Close-to-One Numerical Aperture and Wide-Angle Visible Imaging》

Figure 1(a) illustrates the schematic of the hexagonal SiN grating with a subwavelength lattice constant ($a = 416$ nm). As nanopillars stand on the silicon dioxide substrate, the lattice constant is less than the working wavelength of 633 nm in the substrate (633 nm/n_{SiO_2} = 436 nm) but greater than the diffraction condition (633 nm/$2n_{SiO_2}$ = 218 nm). So there exists only zeroth-order diffraction for normal incidence, but it appears there is only feeble first-order diffraction for the oblique incidence case [51,52].

2. 我在另一篇文章中也看到了一个依据的公式

$$P < \frac{\lambda}{2NA}$$

其中NA是数值孔径
铁哥说这个也是对的，但是不知道为啥。文章参见《Design of dual-wavelength polarization control metasurface lens》（西北工业大学学报上的一个文章）

周期是P_x=P_y=490 nm，满足奈奎斯特抽样定律：$P < \lambda/2d_{NA}$，其中λ是波长，d_{NA}是数值孔径。在本设计中设置数值孔径d_{NA}=0.8。