$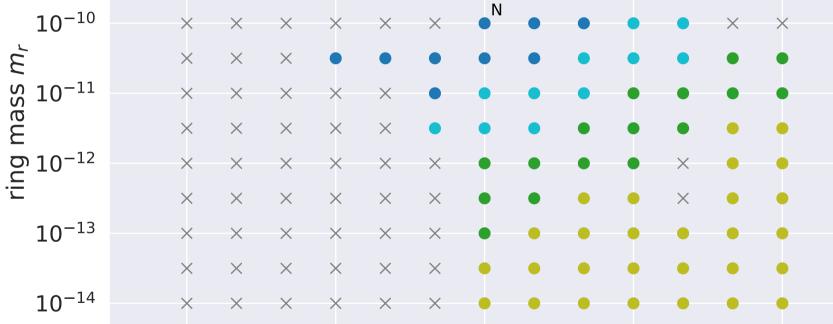$\Delta a_0 = 1 \times 10^{-4}$$