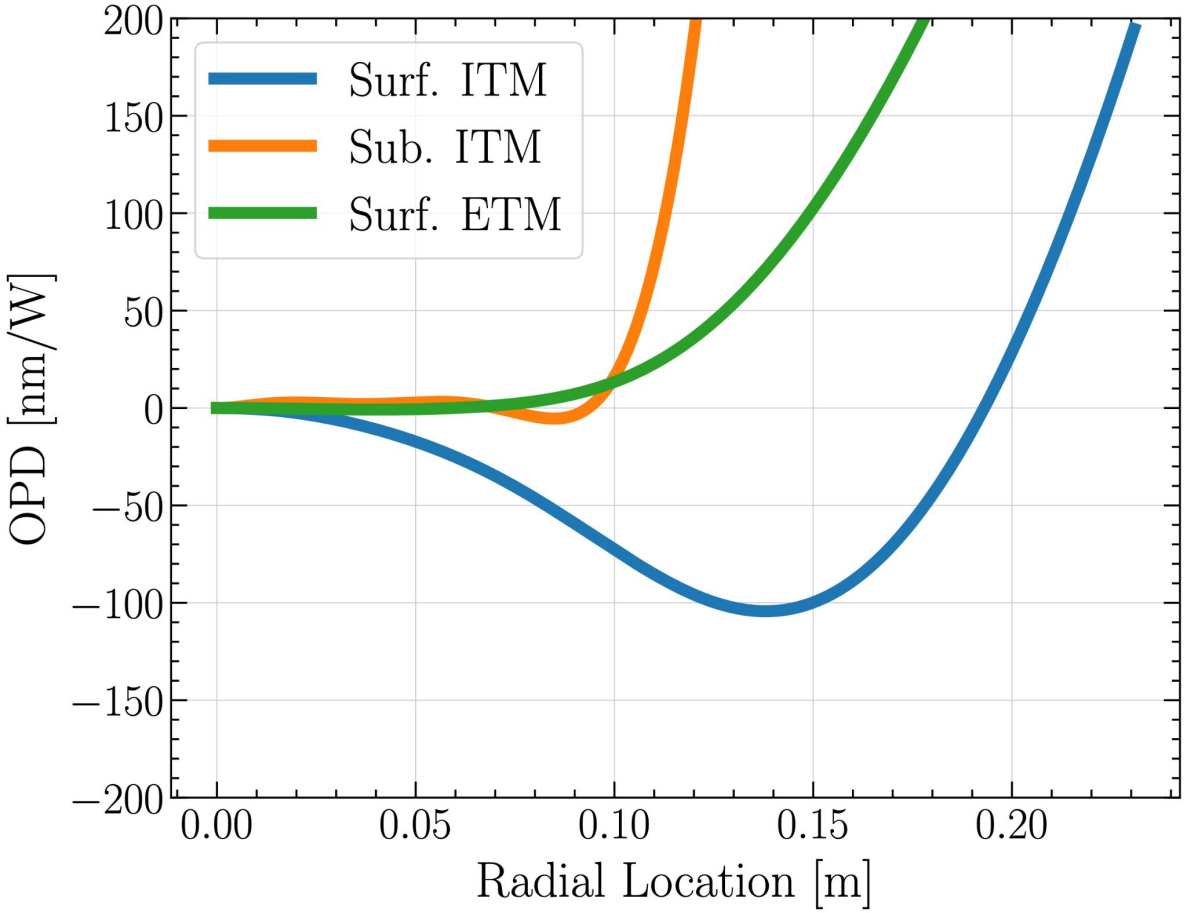
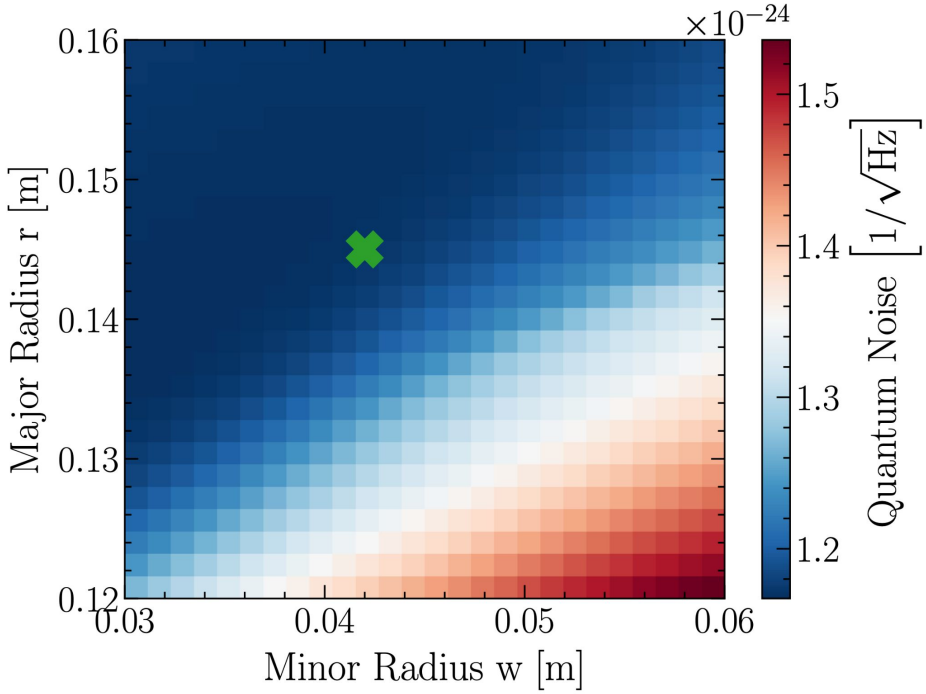
Add second FROSTI ITM Ring to Smooth Out Residual Error at Large Radii



Surface and substrate residual wavefront error for both FROSTI ITM and ETM.

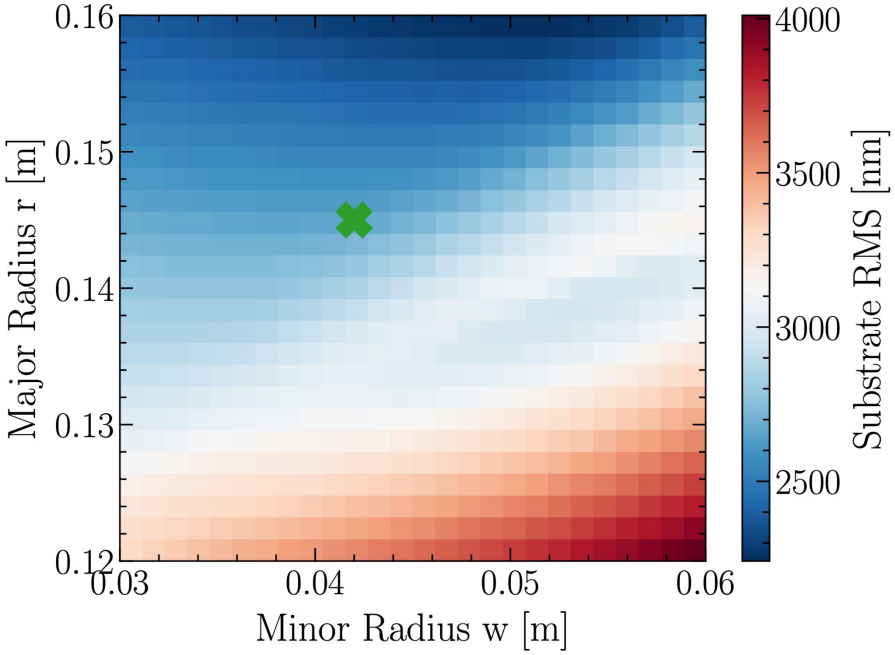
Need a second FROSTI ITM (outer ring) to bring the residual wavefront error down

1. Assume the optimal dual FROSTI (ITM and ETM) parameters as identified earlier.
2. Grid search second FROSTI ITM location and width. The FROSTI power is set to optimize the QN and the ITM Surf. and Sub. RMS: QN*1e24 + Sub/1000 + Surf/100
3. The RH power is set to remove the curvature deformation in ITM substrate.



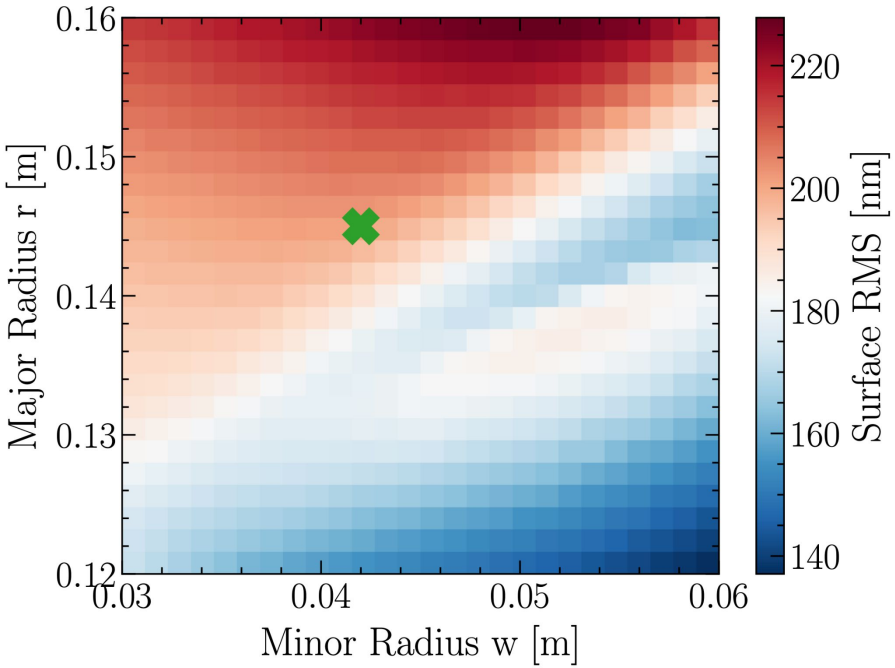
	Perfect ETM	Two ITM Ring
QN [1/rt(Hz)]	1.164e-24	1.169e-24

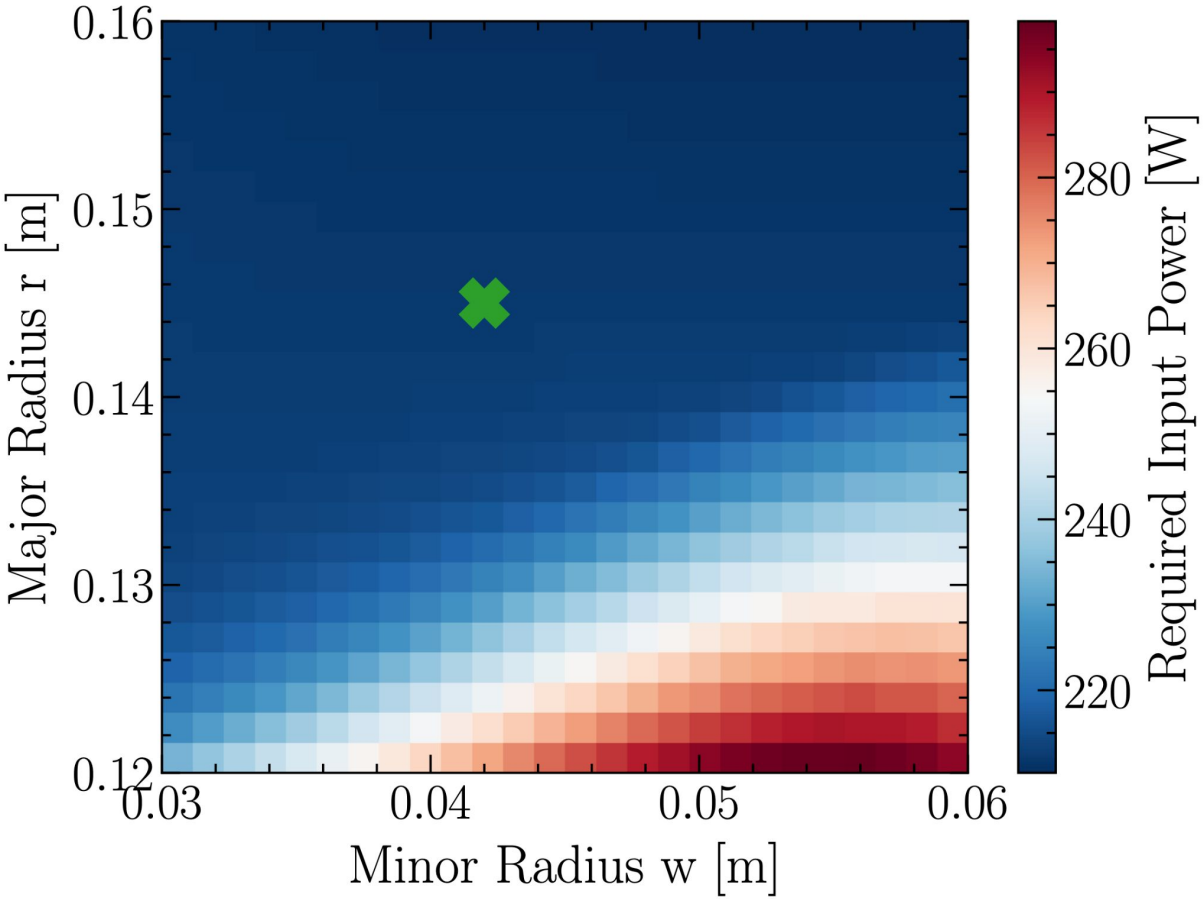
Reach the same QN sensitivity as the single ITM case



The FROSTI (ITM outer ring) is tuned to optimize the surf and sub RMS error simultaneously.

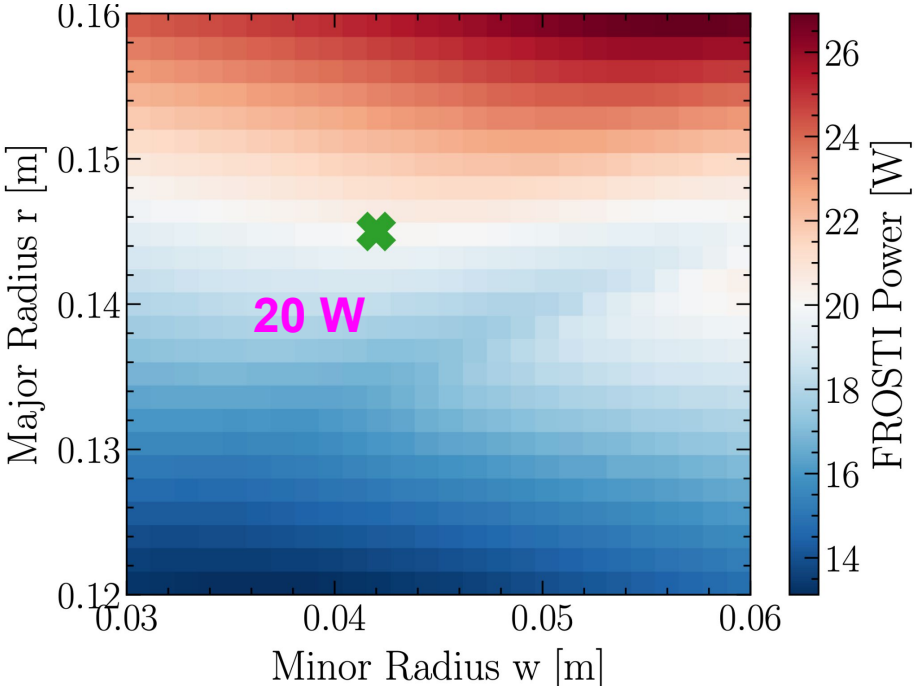
The surface and substrate has the opposite behavior in the landscape, making the dual optimization difficult.

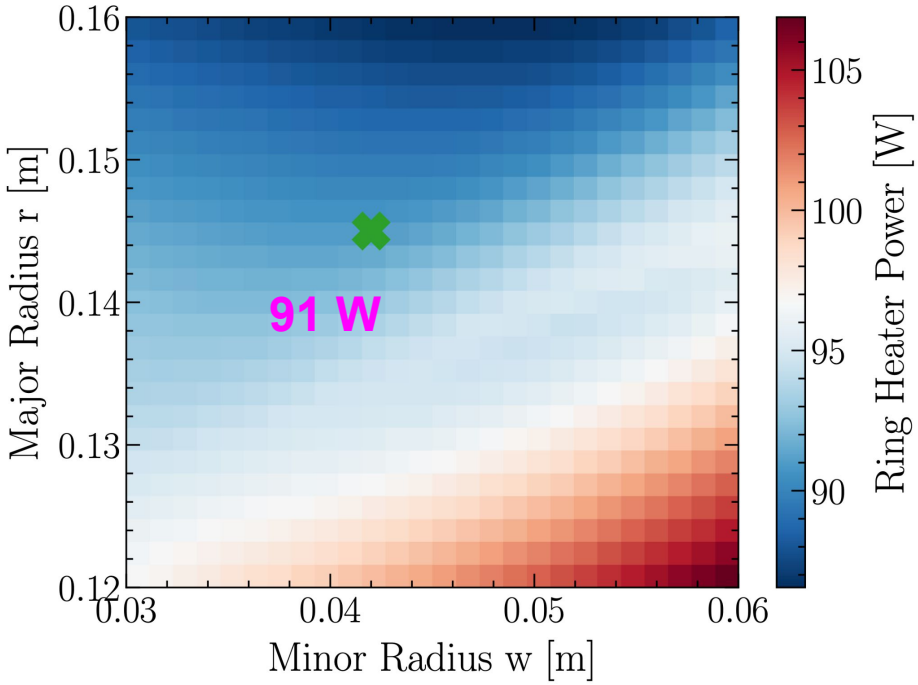




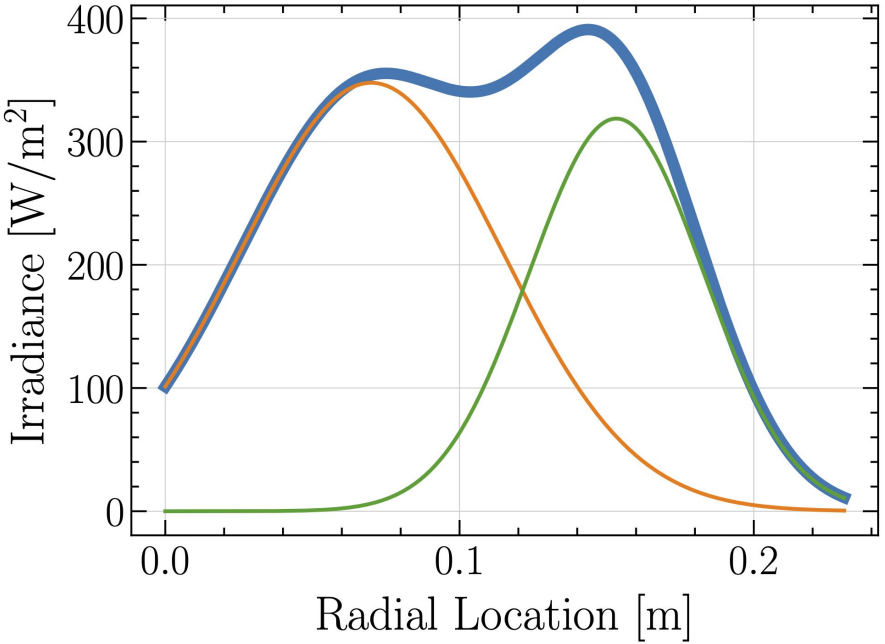
The required input power landscape does not vary significantly. It says near optimal for the region of interest.

The required FROSTI (second ring) power and ring heater power: 20 W, 91 W.





1. Without the second ITM ring, the ring heater power requires 119 W.
2. The required RH power dropped to 91 W as we add a second ring.



The total FROSTI ITM irradiance with two heater rings

The residual wavefront error with two FROSTI ITM rings (dashed) is much lower than the single-ring case