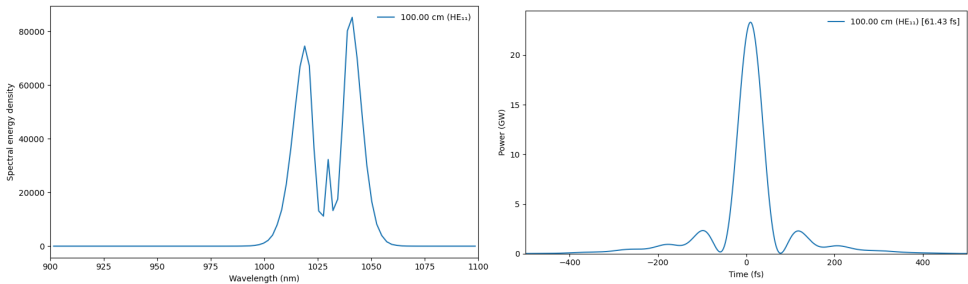


First and Second Stage

1st stage: SPM

Input: 330fs centered at 1030nm
Parameters: 268um radius, 1m length, 2mJ, 2.0 bar of Argon
Optics: 1mm SiO2 window on both ends of fiber, 2 2.1mm BK7 lenses, 4m total air, 8 HD59 chirp mirrors, 1mm SiO2 wedges for optimization
Output: 61.43fs, ~93% efficiency



2nd stage: more SPM

Parameters: 268um radius, 1.5m length, 1860uJ
Optics: 1mm SiO2 window and 1mm MgF2 window on fiber, 3m total air, 4 PC147 chirp mirrors, 3.5mm SiO2 polarizer, 2mm SiO2 wedges for optimization
Output: ~90%, 95%, 90% efficiency

Argon Pressure (bar)	Output Pulse Duration (fs)	Frequency domain	Time domain
0.6	6.38		
0.5	8.89		
0.45	10.09		

3rd Stage RDW Tuning

Helium Pressure (bar)	Pulse Energy (μJ)	Input Pulse Duration (fs)	λ_{zd} (nm)	λ_{RDW} (nm)	RDW Energy (μJ)	Conversion Efficiency (%)
0.5	900	8.89	340	130	8.1	0.9
0.5		10.09				
1.0	380	6.38	410	145	10.26	2.7
1.0	470	8.89	410	150	23.97	5.1
1.0	500	10.09	410	145	13.5	2.7
2.0	220	6.38	470	155	4.62	2.1
2.0	270	8.89	490	155	12.83	4.75
2.0	270	10.09	480	155	12.15	4.5
3.0	220	8.89	530	180	15.62	7.1
3.0	220	10.09	530	180	14.3	6.5
4.0	170	8.89	560	205	13.6	8
4.0	170	10.09	560	205	12.24	7.2
5.0	120	8.89	600	230	9.0	7.5
5.0	120	10.09	600	235	8.16	6.9

Conclusions:

Energy needed for sub 0.5 bar increases exponentially and the RDW isn't too intense to keep the shape. Considered investigating the energy/ionization when the input pulse duration is shorter (efficiency may drop but we'd potentially be able to get a shorter wavelength)