- **QPS CDR Will Address the scope, cost and schedule to some extent, but will concentrate more on**
  - **the technical issues that the team has identified as a result of the conceptual design studies**
  - **plans for addressing these issues in the future**

DOE Approved QPS Mission Need

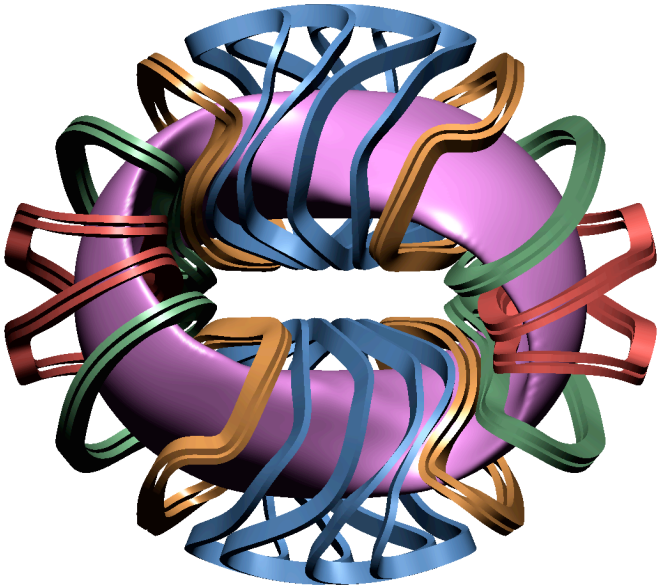
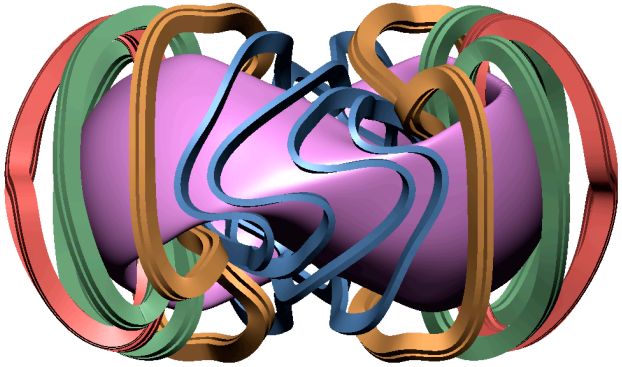
- **Explore the physics consequences of quasi-poloidal symmetry**
- **Extend compact stellarator configurations to much lower aspect ratio**
- **Complement NCSX in completing the basis needed for advancing the development of the compact stellarator concept to the next stage**

Motivation for the QPS Project

- **Explore potential advantages of QP symmetry**
  - neoclassical transport reduction
  - poloidal flow shear to reduce anomalous transport
  - reduction of bootstrap current
  - ballooning stability
  - extend understanding of confinement understanding
  - basis for a higher-β QP configuration?
- **Explore limits of very low stellarator aspect ratio**
  - benchmarking and improvement of 3-D theory
  - basis for a more compact stellarator reactor?

Modular coil configuration

QPS coil set 0718-6b3

R0 = 0.90 m, a = 0.33 m

Coil ID	M1	M2	M3	M4A	M4B
Length per turn (in)	172.5	168.7	181.3	179.3	188.1
Min Bend Rad (in)	5.6	4.9	4.3	3.7	3.7
Min Plasma Dist (in)	5.02	5.00	5.93	5.46	5.66
Max Plasma Dist (in)	12.9	12.5	16.4	15.4	15.3
Min Coil-Coil Dist, CW (in)	7.13 M1-M1	5.45 M2-M1	4.34 M3-M2	3.83 M4A -M3	2.44 M4B-M4A
Min Coil-Coil Dist CCW (in)	5.45 M1-M2	4.34 M2-M3	3.83 M3-M4A	2.44 M4a-M4B	5.88 M4B-M4B
Nom Coil Current (kA)	361	361	361	181	181