

# Physical and Engineering Designs for Chinese First Quasi-axisymmetric Stellarator (CFQS)

- The Southwest Jiaotong University in China and the National Institute for Fusion Science in Japan are collaborating to construct the Chinese First Quasi-axisymmetric Stellarator (CFQS) in Chengdu, China.
- The physical and engineering designs of CFQS have been performed by various constrains on equilibrium, MHD instabilities, neoclassical and turbulent transport, etc. The neoclassical transport in the  $1/\nu$  regime of CFQS is expected to be comparable with that in tokamaks.
- The optimized configuration for the CFQS are: toroidal periodic number  $N_p=2$ , magnetic field strength  $B_t=1.0$  T, major radius  $R_0=1.0$  m and aspect ratio  $A_p=4.0$  with 16 modular coils.
- The engineering design for modular coils, the vacuum vessel and the support structures has been preliminarily fulfilled.

