

Quasi-axisymmetric Stellarator with Tokamak-like Shear

I. Disadvantage: some issues of stability.

1) Neoclassical tearing modes

Absence of bootstrap current islands causes growth.

2) Possible lowering of ballooning beta limit

Tokamak-like shear can cause a cancellation between local and global shear.

II. Advantage: much more flexible experiment with better quasi-symmetry and more shear.

1) Consistent with natural current profiles

Stellarator-like shear in vacuum plus current tends towards no shear.

2) Should allow better quasi-symmetry with high shear.

Axisymmetric shaping causes q to become larger.
(Shaping tends to create a separatrix where q goes to infinity)

3) Axisymmetric shaping for shear and well can be performed with distant coils