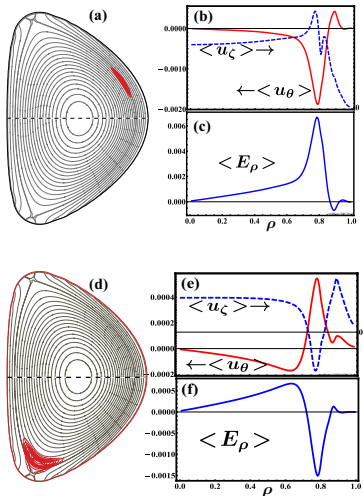


# Edge poloidal pressure asymmetries can drive large shear flows and $E_r$



- MHD equilibria with localized poloidal pressure asymmetries necessarily have large **shear flows** and  $E_r$  at the edge.
- Asymmetries **above** the midplane produce  $u_\theta < 0$  and  $E_r > 0$  (Figs. (a)-(c)). A positive  $E_r$  is **unfavorable** for confinement; it will increase  $P_{LH}$ .
- Asymmetries **below** the midplane produce  $u_\theta > 0$  and  $E_r < 0$  (Figs. (d)-(f)). A negative  $E_r$  is **favorable** for confinement; it will decrease  $P_{LH}$ .
- This physics provides a qualitative explanation for the ion  $\nabla B$ -drift-direction dependence of  $P_{LH}$ .
- **Deliberately-introduced asymmetries can be used to improve or degrade confinement.**