

# Energy principle for the fast resistive wall modes in tokamaks

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The energy principle of the magnetohydrodynamics (MHD) is modified by incorporating the energy sink in the resistive wall.

For the fast modes (strong skin effect in the wall) it becomes

$$\underbrace{\delta K + W_{pl} + W_{vac}^{id}}_{\text{energy with ideal wall}} = \underbrace{\frac{d_w}{2\sqrt{\gamma\tau_{sk}}} \oint |\mathbf{b}|^2 dS_w}_{\text{energy sink due to wall resistivity}}$$