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ExB Shear and Precession Shear Induced Turbulence Suppression

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Starting from the modern bounce-kinetic formalism, [1] a two-point equation which properly describes turbulent eddies associated with trapped electrons is systematically derived in general tokamak geometry. Trapped electron precession shear, as well as ExB shear, is naturally included in the derivation. Our two-point analysis, using moments of separation between the two points, reveals that both precession shear and ExB shear participate on suppressing trapped-electron-related turbulence and their synergism is determined by the relative sign. Our result provides explanations on broad range of experimental observation regarding electron thermal internal transport barrier observed in various tokamaks. [2-4]

References

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Primary author: Prof. HAHM, Taik Soo (Seoul National University)

Co-author: Mr CHOI, Gyung Jin (Seoul National University)

Presenter: Prof. HAHM, Taik Soo (Seoul National University)

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