**KNOSOS, a fast neoclassical code for three-dimensional magnetic configurations**

New version of the code: the bounce-averaged drift kinetic equation implemented is

\[
\int_{l_{b1}}^{l_{b2}} \frac{dl}{|v||} \left( v_{M,b} + \frac{B}{\langle B \rangle} v_E \right) \cdot \nabla \alpha (\partial_\alpha + \partial_\alpha \lambda | \partial_\lambda ) g_b - \int_{l_{b1}}^{l_{b2}} \frac{dl}{|v||} C_{b}^{\text{lin}}[g_b] = - \int_{l_{b1}}^{l_{b2}} \frac{dl}{|v||} (v_{M,b} + v_E) \cdot \nabla \psi \nabla s_{b} F_{M,b} \cdot
\]

More accurate and/or faster than standard neoclassical codes in two limits:

(1) Large aspect ratio stellarators (and standard values of \( E_r \))

![Graph showing comparison between DKES and KNOSOS](image1)

Benchmarked against DKES, orders of magnitude faster \( \Rightarrow \) KNOSOS will be used for stellarator optimization.

(2) Optimized stellarators (relevant when \( E_r \) is small)

![Graph showing energy flux](image2)

Tangential magnetic drift needed for correct calculation of energy flux \( \Rightarrow \) KNOSOS will be used for analyzing W7-X experiments.

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