# An investigation on the plasma conditions for complete gyroviscous cancellation

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The well-known gyroviscous cancellation in sheared slab geometry is investigated by a systematic perturbative method based on the Mikhailovskii and Tsypin's closure relation and on the large gyrofrequency ordering for flowing plasmas. Systematically perturbed velocity moments of the kinetic equation allow an easier identification of the cancellation mechanism for each perturbed momentum balance equations to investigate the plasma conditions for complete cancellations when the lowest order flow velocity is considered. The gyroviscous cancellations of each order are presented in the coordinate-free forms and in the important parallel directions. With the lowest-order flow velocity considered, the residuals remain in the first-order momentum balance, at an order lower than previously investigated in the literature. The conditions on the lowest order residuals to yield complete gyroviscous cancellations are presented and discussed.