The pion mass in finite volume to two loops

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Abstract: We evaluate the pion mass in finite volume to two loops within chiral perturbation theory. The results are compared with a recently proposed extension of the asymptotic formula of Lüscher. We find that contributions, which were neglected in the latter, are numerically very small at the two-loop level and argue that for $M_\pi L > 2.5$, $L > 2$fm the finite volume effects in the meson sector are analytically well under control.