

The MSSM with large $\tan(\beta)$ beyond the decoupling limit

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If the parameter $\tan \beta$ of the MSSM is large, enhanced loop corrections must be resummed to all orders in perturbation theory. We perform this resummation for flavour-diagonal and flavour-violating \tan - β -enhanced corrections without resorting to the decoupling limit, in which the MSSM is reduced to an effective 2HDM. Our results enable us to clarify the dependence of the resummed expressions on the renormalization scheme and to cover two new classes of processes with supersymmetric particles, which are both intractable with the conventional effective-2HDM method: The first class are collider processes with external supersymmetric particles; the second class are loop processes which vanish in the decoupling limit of supersymmetry. Applying the resummation formulae to FCNC processes in B physics, we find an interesting new effect in observables in which the chromomagnetic effective operator is important.

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