world average, we first combine six pre-averages, excluding the lattice result, using a χ^2 *averaging method*. This gives

$$\alpha_s(M_Z^2) = 0.1176 \pm 0.0011\,, \qquad \text{(without lattice)}\,. \tag{9.24}$$

This result is fully compatible with the lattice pre-average Eq. (9.23) and has a comparable error. In order to be conservative, we combine these two numbers using an unweighted average and take as an uncertainty the average between these two uncertainties. This gives our final world average value

$$\alpha_s(M_Z^2) = 0.1179 \pm 0.0010\,. \tag{9.25}$$

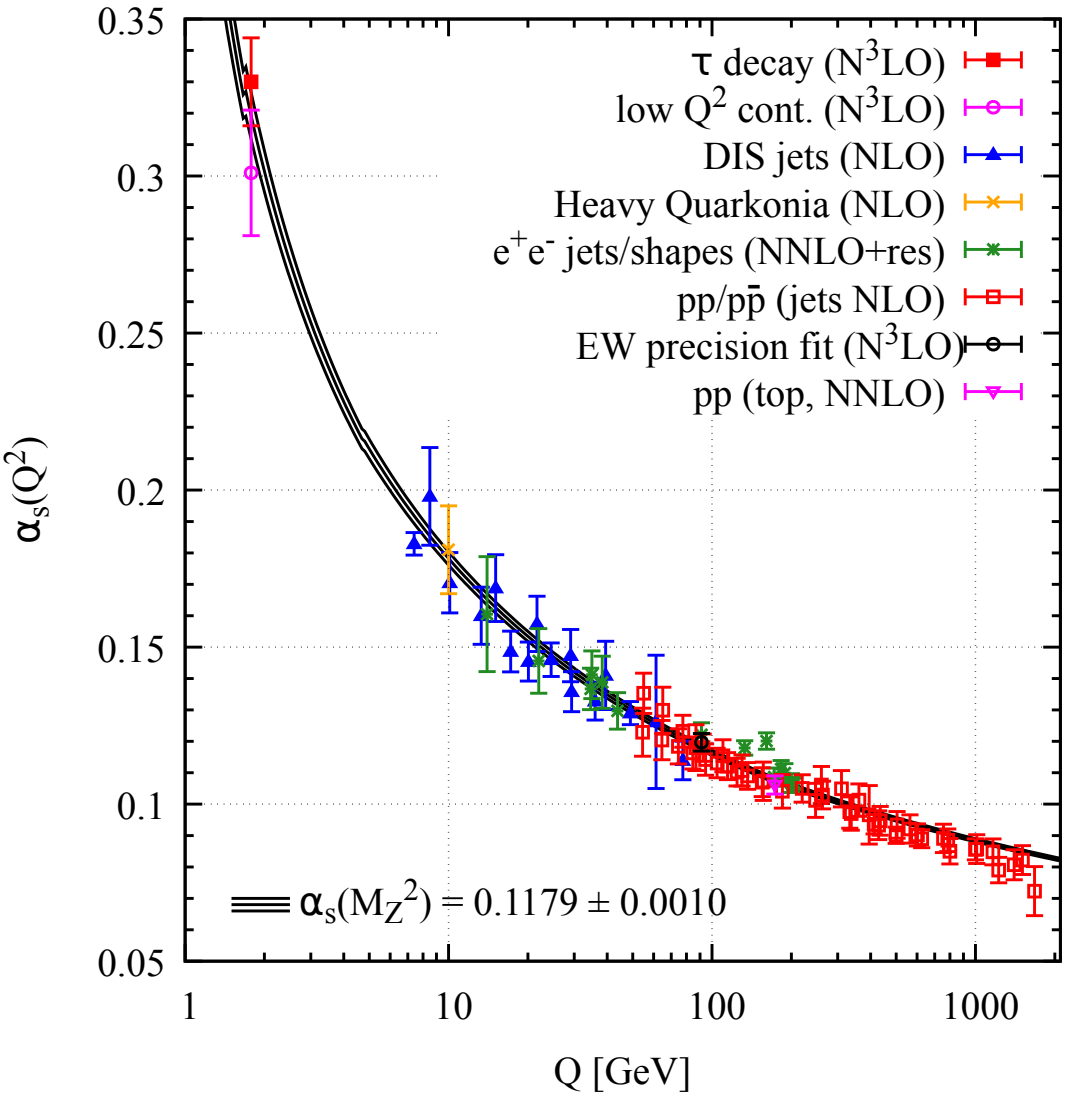

Figure 9.5: Summary of measurements of α_s as a function of the energy scale Q. The respective degree of QCD perturbation theory used in the extraction of α_s is indicated in brackets (NLO: next-to-leading order; NNLO: next-to-next-to-leading order; NNLO+res.: NNLO matched to a resummed calculation; N^{3}LO: next-to-NNLO).

This world average value is in very good agreement with the last version of this *Review*, which was $\alpha_s(M_Z^2) = 0.1181 \pm 0.0011$, with only a slightly lower central value and decreased overall