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The strong coupling from $e^+e^- \rightarrow$ hadrons

We use a new compilation of the hadronic R-ratio from available data for the process $e^+e^- \rightarrow$ hadrons below the charm mass to determine the strong coupling α_s , using finite-energy sum rules. Quoting our results at the τ mass to facilitate comparison to the results obtained from similar analyses of hadronic τ -decay data, we find $\alpha_s(m_\tau^2) = 0.298 \pm 0.016 \pm 0.006$ in fixed-order perturbation theory, and $\alpha_s(m_\tau^2) = 0.304 \pm 0.018 \pm 0.006$ in contour-improved perturbation theory, where the first error is statistical, and the second error combines various systematic effects. These values are in good agreement with a recent determination from the OPAL and ALEPH data for hadronic τ decays.

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