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**Statistical essentials for precision cosmology:
the covariance matrix of the matter power
spectrum**

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The distribution of matter in the Universe contains a wealth of information about the energy content of the Universe, its properties, and evolution. Its two-point analysis is the prime focus of many cosmological observables like weak lensing (WL) or galaxy clustering. The two essential theoretical ingredients are the matter power spectrum and its covariance matrix. In this talk, I will discuss a new perturbative approach to calculating the covariance matrix up to dominant terms at the 1-loop order and compare it to numerical simulations and show that the full covariance matrix can be approximated as the disconnected part only, with the connected part being treated as an external nuisance parameter with a known scale dependence. Finally, I will provide a prescription for evaluating covariance matrix directly from data, without the use of large simulations.