Cosmological parameter estimation and Fisher information matrix

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In cosmology, estimation of so called cosmological parameters is the ultimate goal in order to understand of our universe. With modern tech- nology, computer can randomly simulate a universe according to a set of cosmological parameters, and we observe the real universe through telescopes. Thorough comparison between them will provide a good esti- mate of the cosmological parameters. But before going to the estimation, we should understand how difficult the problem is. We simulated a lot of universe with different cosmological parameters and estimate the Fisher information matrix with a non-parametric method. This will show how difficult the problem is, and how much sample points we need in order to have a good estimate.