## Jacobi Mapping Approach for a precise Cosmological Weak Lensing Formalism

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Upcoming cosmological weak lensing surveys have the potential to map the large-scale matter distribution up to high redshifts with unprecedented precision. Thus, they will play a major role in understanding mysteries of the universe such as the nature of dark energy. However, to realize the full potential of the upcoming surveys we need to develop a theoretical framework for the lensing observables with accuracy demanded by the data set. As I will discuss in this talk, the standard weak lensing formalism yields gauge-dependent results for the weak lensing observables. Hence, it does not capture all the physical effects contributing to the distortion of galaxy shapes. I will present a gauge-invariant formalism based on the Jacobi map which resolves this issue.

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