**Cumulants on Wiener chaos: moderate deviations and
the fourth moment theorem**

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A moderate deviation principle as well as moderate and large deviation inequalities for a sequence of elements living inside a fixed Wiener chaos associated with an isonormal Gaussian process are shown. The conditions under which the results are derived coincide with those of the celebrated fourth moment theorem of Nualart and Peccati. The proofs rely on sharp estimates for cumulants. As applications, explosive integrals of a Brownian sheet, a discretized version of the quadratic variation of a fractional Brownian motion and the sample bispectrum of a spherical Gaussian random field are considered. This is joint work with Christoph Thäle.