



MAFIA - the seminar you can't refuse

Holomorphic Hermite polynomials and bipartite coherent states

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Abstract: We will present properties of the holomorphic Hermite polynomials in two complex variables and show how they can be used to construct entangled coherent states. The presentation is divided into two parts. The algebraic properties of the Hermite polynomials, which are analogous to those obeyed by the standard Hermite polynomials, will be shown in the first part. There will be also a generalization of non-rotational orthogonality invented by van Eijndhoven and Meyers which will be used to investigate analytic properties and to show that the Hermite polynomials in two complex variables give rise to orthonormal bases in Bargmann-like Hilbert spaces of entire functions. In the second part it will be presented a construction of bipartite coherent states based on such Hermite polynomials. Properties of these states, especially those implied by their non-factorial character and related to entanglement, will be discussed.