



## Exploring a Generalized Voigt-type Function Associated with Fubini Polynomials and Related Identities

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### Abstract

The primary objective of this paper is to introduce and investigate a generalized Voigt-type function associated with two-variable Fubini polynomials. By utilizing the generating functions of Fubini–Hermite polynomials in conjunction with the analytical properties of Hermite polynomials, we establish several mathematical connections between these polynomial families and the proposed generalized functions. We derive explicit representations, series expansions, and integral identities for the generalized Voigt-type function, demonstrating that the classical Voigt function is recovered as a significant special case of this formulation. Furthermore, we develop multiparameter and multivariable extensions, providing a broader analytical framework for these functions. These results reveal novel relationships between Voigt-type functions and families of special polynomials, offering a robust mathematical tool for applications in theoretical physics and related scientific disciplines.

**Keywords:** Voigt function, Hermite polynomials, Fubini polynomials, Kampé de Fériet function, Fubini-Hermite polynomials.

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