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Recent progress in exact lattice path enumeration

We will report on some recent taxonomic results in lattice paths confined to the first quadrant. Three independent investigations have offered different concrete strategies for deciding the nature of the generating function for a class of walks, based solely on the allowable directions for the steps. Our favourite is an adaptation of the kernel method. The underlying functional equations appear in a far broader combinatorial context, and the kernel method handles these equations well. The results can be either exact enumeration, or a prediction of the nature of related generating functions. We will discuss the potential of this technique to predict D-finiteness for general combinatorial classes.