1030-05-357 **Marni Mishna*** (`mmishna@sfu.ca`), Dept. Mathematics, Simon Fraser University, 8888 University Drive, Burnaby, BC V5A1S6, Canada. *Systematic Asymptotic Enumeration of Regular Structures.*

We describe a mostly automated method for determining the asymptotics of combinatorial classes with particular type of regularity. The method relies on the fact, proven by Gessel, that the scalar product of symmetric function preserves D-finiteness, and that this property has been made effective. In practice, we can, for example, compute the differential equation satisfied by various families of k-regular hypergraphs for $k < 6$, and several related variants.

The solution relies on properties of the Weyl algebra, and we will discuss: how to use this context to find recurrences of lowest order; the possibility that the computations can be improved; and finally, the possibility of extending the work to other types of coefficent extraction problems. (Received August 06, 2007)