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Quasi-polynomials, asymptotics and $[Q,R]=0$

We study families (parametrized by a positive integer, k) of distributions associated to a class of piecewise quasi-polynomial functions on a lattice. These distributions admit an asymptotic expansion in k , and we study to what extent the original family can be recovered from its asymptotic expansion. This is joint work with P-E. Paradan and M. Vergne. I will discuss some applications to symplectic geometry, where the piecewise quasi-polynomial functions arise as multiplicity functions for the equivariant index of a Dirac operator twisted by the k^{th} power of a pre-quantum line bundle.