Computer-aided computation of asymptotic expansions in nonlinear homogenisation problems with memory effects

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Abstract. Homogenisation problems which introduce memory effects are difficult, and despite three decades of research, the available results are still restricted to particular types of equations. For nonlinear equations, only the method of asymptotic expansion shows some promise for success, in particular by a possibility to reduce complicated integrals to graphs.

We shall present algorithms developed to facilitate this manipulation, and produce both graphs and formulæ with multiple integrals needed in this research.

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