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One-dimensional reduction of abstract renewal equations describing population dynamics

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Despite their relevance in mathematical biology, there are, as yet, few general results about the asymptotic behaviour of measure valued solutions of renewal equations on the basis of assumptions concerning the kernel. We characterise, via their kernels, a class of renewal equations whose measure-valued solution can be expressed in terms of the solution of a scalar renewal equation. The asymptotic behaviour of the solution of the scalar renewal equation, is studied via Feller's classical renewal theorem and, from it, the large time behaviour of the solution of the original renewal equation is derived.

The talk is based on joint work with Eugenia Franco and Odo Diekmann.