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On continuous time models in genetic and Bernstein algebras. (English summary)

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Certain models in population genetics describing continuously overlapping generations may be studied by means of differential equations involving elements in linear algebras. This paper deals with the long-term behavior of the solutions to such equations in two important classes of algebras. First, the authors combine the ideas developed by the reviewer concerning genetic algebras in continuous time models [Theoret. Population Biol. **4** (1973), 133–144; MR0334991 (48 #13309)] with the concept of genetic realization introduced by A. Wörz-Busekros [*Algebras in genetics*, Lecture Notes in Biomath., 36, Springer, Berlin, 1980; MR0599179 (82e:92033)]. It is shown that the solution $x(t)$ to the basic equation $\dot{x} = x^2 - x$ in a genetic algebra with genetic realization converges to an idempotent, provided that $x(0)$ can be interpreted as a population. Second, it is demonstrated, using Peirce decompositions, that the solution to this equation also converges to an idempotent if the underlying algebra is Bernstein and $x(0)$ is of unit weight. *Ivar Heuch*