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Arthur Lim (arthurlim@nd.edu), 255 Hurley, South Bend, IN 46556, and **Jialing Dai***
(jdai@pacific.edu), 3601 Pacific Ave, Stockton, CA 95211. *On Product of Companion Matrices.*

This paper describes an explicit combinatorial formula for a product of companion matrices. The method relies on the connections between matrix algebra and associated combinatorial structures to enumerate the paths in an unweighted digraph. As an application, we obtain bases for the solution space of the linear difference equation with variable coefficients. (Received August 21, 2013)