

1096-05-2074      **Michael Severino\*** ([michael.severino@umontana.edu](mailto:michael.severino@umontana.edu)). *A construction of uniquely  $n$ -colorable digraphs without short cycles.*

A natural digraph analogue of the graph-theoretic concept of an ‘independent set’ is that of an ‘acyclic set’, namely a set of vertices not spanning a directed cycle. Hence a digraph analogue of a graph coloring is a decomposition of the vertex set into acyclic sets. In the spirit of a famous theorem of P. Erdős [Graph theory and probability, *Canad. J. Math.*, **11**:34–38, (1959)], it was shown probabilistically in [D. Bokal et al., The circular chromatic number of a digraph, *J. Graph Theory*, **46**(3): 227–240, 2004] that there exist digraphs with arbitrarily large girth and chromatic number. Here I give a construction of such digraphs as well as define a product of these highly chromatic digraphs with the directed analogue of the complete graph. This product gives a construction of uniquely  $n$ -colorable digraphs without short cycles. (Received September 17, 2013)