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**Nikos Frantzikinakis\*** ([frantzikinakis@gmail.com](mailto:frantzikinakis@gmail.com)), University of Memphis, Department of mathematics, Memphis, TN 38138. *Multiple ergodic theorems for Hardy field sequences.*

Recently, there has been an outburst of activity in studying multiple ergodic averages along polynomial sequences, one motivation being the potential implications in combinatorics. In this talk, we are going to give a variety of new multiple ergodic theorems involving sequences of integers of polynomial growth, defined by functions that belong to some Hardy field. One interesting feature of these new ergodic theorems is that “typically” one gets a very explicit limit formula, leading to stronger than usual multiple recurrence results, and combinatorial consequences. (Received February 03, 2009)