

Meeting: 1001, Evanston, Illinois, SS 5A, Special Session on Codes and Applications

1001-94-191 **Jonathan I. Hall*** (jhall@math.msu.edu), Prof. J.I. Hall, Department of Mathematics,
Michigan State University, East Lansing, MI 48824. *Focused aperiodic correlation and binary phase
shaping*. Preliminary report.

In the use of laser pulses to control chemical reactions, it is necessary to manage intrapulse interference between pairs of frequencies. Chemists have introduced a successful management technique called binary phase shaping. Two phases, 0 and π , are available, and the chosen phases can be represented by a sequence of -1 's and $+1$'s. The phase choice criteria turn out to be related to aperiodic correlation properties of the associated ± 1 -sequences. Preferred sequences have good correlation and what we refer to as good focusing properties. There is a large amount of work on aperiodic correlation in the coding and communications literature, but the special needs of focusing do not seem to have been addressed. We discuss the formulation and some of the preliminary results. (Received August 25, 2004)