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**Jillian E McLeod\***, US Coast Guard Academy, Mathematics Department, 15 Mohegan Blvd, New London, CT 06320. *Partition Regular Matrices as Cryptographic Primitives*. Preliminary report.

Kernel partition regular matrices are characterized by Rado's *Columns Condition* and have been used to describe combinatorial properties that are preserved under passage to finite partitions. It is known that the problem of determining whether an arbitrary matrix satisfies the columns condition is at least *NP*-hard. We investigate possible ways to exploit the difficulty of this problem for purposes of information security. These preliminary explorations indicate that matrices which satisfy the columns condition may in fact make good cryptographic primitives in asymmetric key cryptographic systems. (Received September 26, 2017)