1078-94-217   **Tadashi Wadayama*** (`wadayama@nitech.ac.jp`), Gokiso, Syowa-ku, Nagoya, Aichi 4668555, Japan, and **Manabu Hagiwara** (`hagiwara.hagiwara@aist.go.jp`), Central 2, 1-1-1 Umezono, Tsukuba, Ibaraki 305-8568, Japan. *LP decodable permutation codes based on linearly constrained permutation matrices.*

A set of linearly constrained permutation matrices are proposed for constructing a class of permutation codes. The main feature of this class of permutation codes, called *LP decodable permutation codes*, is this linear programming (LP) decodability. It is demonstrated that the LP decoding performance of the proposed class of permutation codes is characterized by the vertices of the code polytope of the code. Two types of linear constraints are discussed; one is structured constraints and the other is random constraints. The structured constraints allow an efficient encoding algorithm. On the other hand, the random constraints enable us to use probabilistic methods for analyzing several code properties such as the average cardinality and the average weight distribution. (Received December 08, 2011)