962-11-737 **Jasmer Singh*** (jasmer.singh@wanadoo.fr), 29 Avenue du General Leclerc, 92100 Boulogne, France. *Systems of Finite Arithmetic Progressions and Integer Partitions.*

Unlike Van der Waerden's 1927 existence theorem (cf. Ronald L. Graham: Arithmetic Progressions, AMS 1989) our result is explicitly constructive and concerns, not the partitions of the set of integers N, but the set of partitions, of cardinality p(n), of the integer n. NOTATION: (n;m) will denote the A.P. (or, depending on the context, the set of its terms) with greatest term n, common difference between terms or modulus m, and form: n, n-m, ..., n (mod m) (least nonnegative). CONSTRUCTION: ((n;m);k) denotes the set or, more precisely, cf. Lemma, the system of A.P.s formed by taking successively each term of the modulus m A.P., (n;m), as the greatest term of a modulus k A.P. LEMMA: ((n;m);k)=((n;k);m). DEFINITION: (n;m,k)=((n;m);k). Similarly, we form the A.P. system ((...((n;2);3)...);n) = (n;2,3,...,n), of which the terms are those of its A.P.s. This system can be represented geometrically in (n-1) dimensional space, A.P.s of the same modulus being mutually parallel and those of different moduli being mutually orthogonal. We exhibit a bijection to obtain the THEOREM: Card(n;2,3,...n) = p(n). These results prefigure other results of subsequent papers. (Received September 24, 2000)