

Let  $a_1, a_2, \dots, a_t$  be  $t$  different integers among  $(27)$

$d_1, d_2, \dots, d_t$ . For  $1 \leq i \leq t$  let

let  $b_{ij}$

$$b_{ij} = \begin{cases} 1 & \text{if } 2^d a_i = \text{some } c_k \\ 0 & \text{otherwise} \end{cases}$$

Then let

$$r_i = \sum_j b_{ij} 2^d$$

Then  $n = \sum_{i=1}^t a_i r_i$  which reconstructs  $n$  ( $\times$ ).

This defines a bijection between partitions of  $n$  into odd parts & distinct parts.

Example:

$$n = 9 + 9 + 5 + 5 + 3 + 3 + 1 + 1 + 1 + 1 + 1$$

$$= (2) 9 + (3) 5 + 2(3) + 5(1)$$

$$\begin{array}{cccc} \uparrow & \uparrow & \uparrow & \uparrow \\ r_1 & r_2 & r_3 & r_4 \end{array}$$

$$= (2) 9 + (2+1) (5) + (2)(3) + (4+1)(1)$$

$$= 18 + 10 + 5 + 6 + 4 + 1$$

$$= 18 + 10 + 6 + 5 + 4 + 1 \quad \text{into distinct parts}$$

Reverse:

$$18 + 10 + 6 + 5 + 4 + 1$$

$$= 2(9) + 2(5) + 2(3) + 5 + 4(1) + 1$$

$$= 2(9) + (2+1)(5) + 2(3) + (4+1)(1)$$