

## Problem 2.

Jeremy Kun gives a canonical bijection between  $\binom{n+1}{2}$  and a discrete triangle of length  $n$ , as seen in Figure 1.

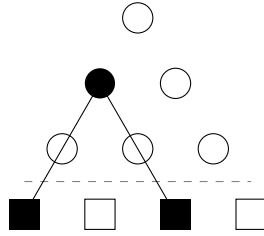


Figure 1: Bijection that maps a point on the triangle with side length 3 to a 2-subset of  $[3 + 1]$ .

**Question.** Is there a similar “projection” that bijects a point on the discrete tetrahedron to a 3-subset of  $[n + 2]$ ?

**Note.** Misha Lavrov gives a potential function to the question on Math Stack Exchange.  
(<https://math.stackexchange.com/a/2468687/121988>)

**Related.**

1. More generally is there a bijection from the  $k$ -simplex to a  $k$ -subset of  $[n + k - 1]$ ?