Nuclide Domino | Rules

Aim of the Game

The task is to synthesize the target nuclide with the help of neutron capture, that is, to reach it with your game figure. Try to reach the goal in fewer steps than your opponent.

Game Rules

To advance nucleosynthesis, you must try to climb to the top right of the nuclide table. The neutron capture helps you to do this. However, neutron capture takes place only with a certain probability. Unstable nuclides can also decay before neutron capture occurs.
Both players have their turn at the same time and have to follow the following procedure :

1. Calculates the probability ratio for the nuclide you are standing on (indicates how likely neutron capture is compared to the decay of the nuclide).
2. Take from the table which number each of you must roll for a neutron capture to succeed. The higher the probability ratio, the higher your chance of neutron capture.
3. Each of you now rolls the dice in turn to attempt a neutron capture.
   There are two possibilities:
   1. If your dice count is high enough, you can make the neutron capture move on the board and continue playing. So you start again from step 1 on the new field.
   2. If your dice number is too low, the nuclide you are standing on will decay. So you have to move your piece according to the rules of nuclear conversion:
      Beta-Minus, Double Beta-Minus, Beta-Plus, or Double Electron capture
      This ends your turn. Your opponent may continue until he also has to make a nuclide conversion. Only when you have both made a nuclide conversion, you may re-enter the race.

The player who gets to the given goal in fewer moves wins the nuclide race.After each game, compare the paths you both took.

Probability Ratio p_n/λ	Required number for a Neutron capture
< 0,0001	Neutron Capture not possible
0,0001 – 0,009	6
0,001 - 0,09	5 or 6
0,1 - 99	4,5 or 6
100 – 9 999	3, 4, 5 or 6
10 000 – 100 000	2,3,4,5 or 6
> 100 000 or stabil	1,2,3,4,5 or 6