Some principles and formulas we use in the Agar-Server, that you use in your bots logic

1 General Information

- The server runs with consistently 30fps (So $\delta t = 0.03$).
  When calculations take too long and 30fps are not possible, there will be less calculations per second but δt will still be corrected to 0.03.
- The calculation order is non-deterministic. That means, that there is no advantage over another player if one blob is larger or longer in play.
- Food and Toxins are randomly added during play. It is possible, that a toxin spawns inside a blob and causing it to explode (Will not happen very often!).

2 Splitting/Exploding/Throwing

- When a blob explodes, a blob/toxin splits or food is thrown, the new blobs/food/toxin will be given an additional velocity, which will be added to the normal movement.
- The additional velocity decreases over time. At every timestep the velocity is multiplied by 0.95.
  So: $newVelocity = oldVelocity * 0.95$
  This is identical for blobs, food and toxin.

3 Toxin Calculations

- When a toxin is split and moving, it will adopt the velocity of the last food that is thrown into the toxin.

4 Food Calculations

- When a food is thrown, it will always move in the direction of the bots target.
- Every blob (when exploded or split) of one bot will throw a food. This can result in multiple foods thrown in one time step.