Game Prototype: Atomic Race

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Game Description

The goal of this game is to move the player through a field of obstacles from start to finish. The field consist of same sided triangles, which allows the player to move in one of 6 directions. Each field may be influenced by

- Poles, either red (positive) or blue (negative), which attract or repel the player according to his charge.
- Flow fields. Flow fields apply a force on the player in a certain direction.
- Obstacles and walls, no movement possible.
- Coins, which represents a simplified model of the electrons and protons of the atoms. Can be collected.
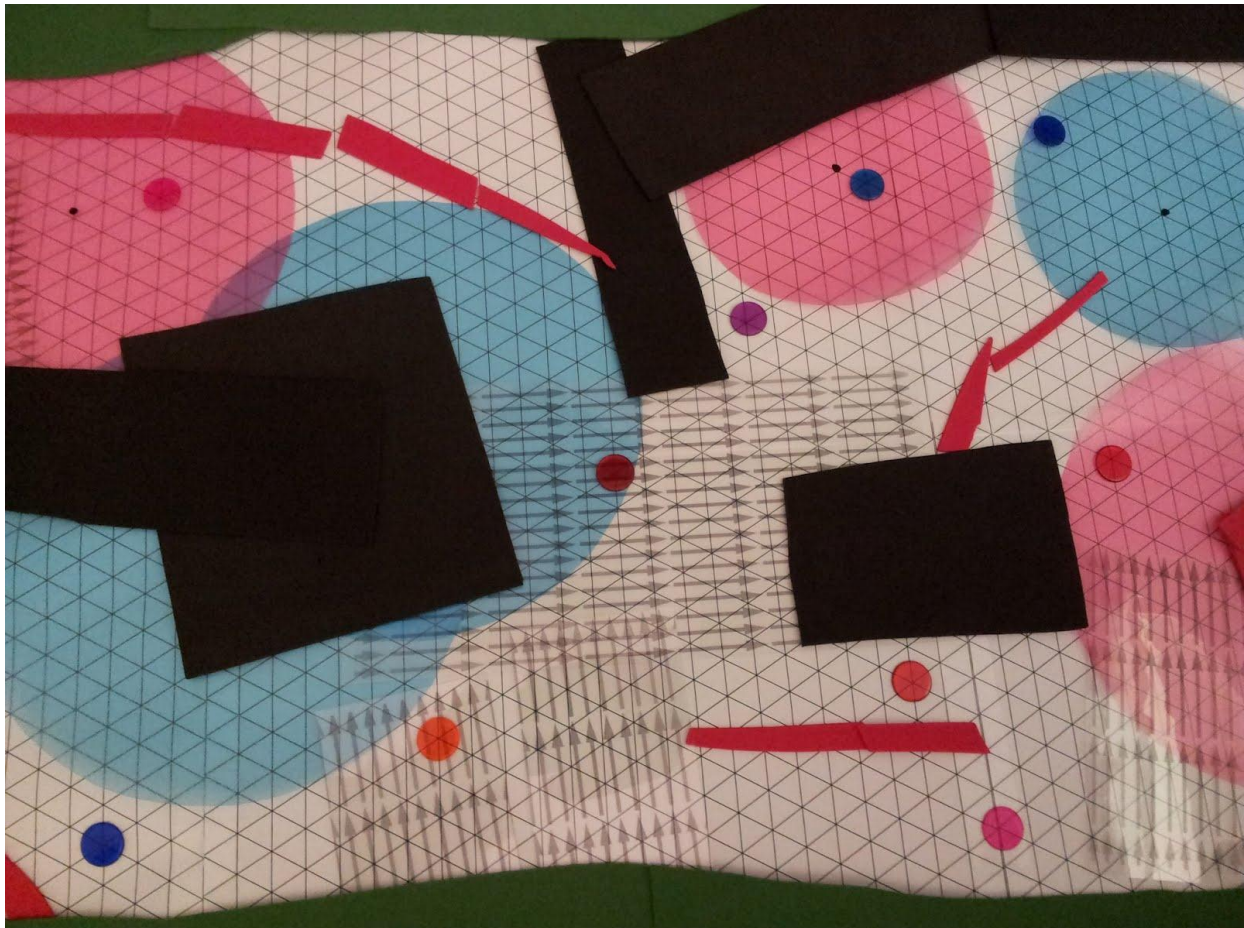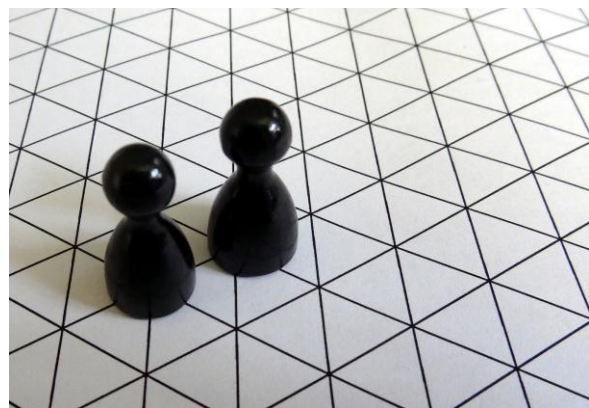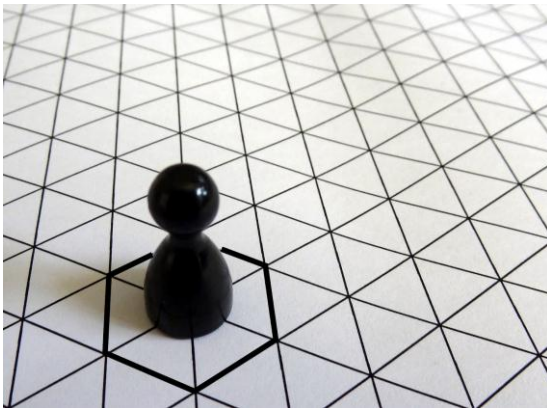
Gameplay

In the beginning, a player has a neutral charge. This means he's neither attracted or repelled to or form a pole. Each player starts with his own figure and places his figure on the start line:
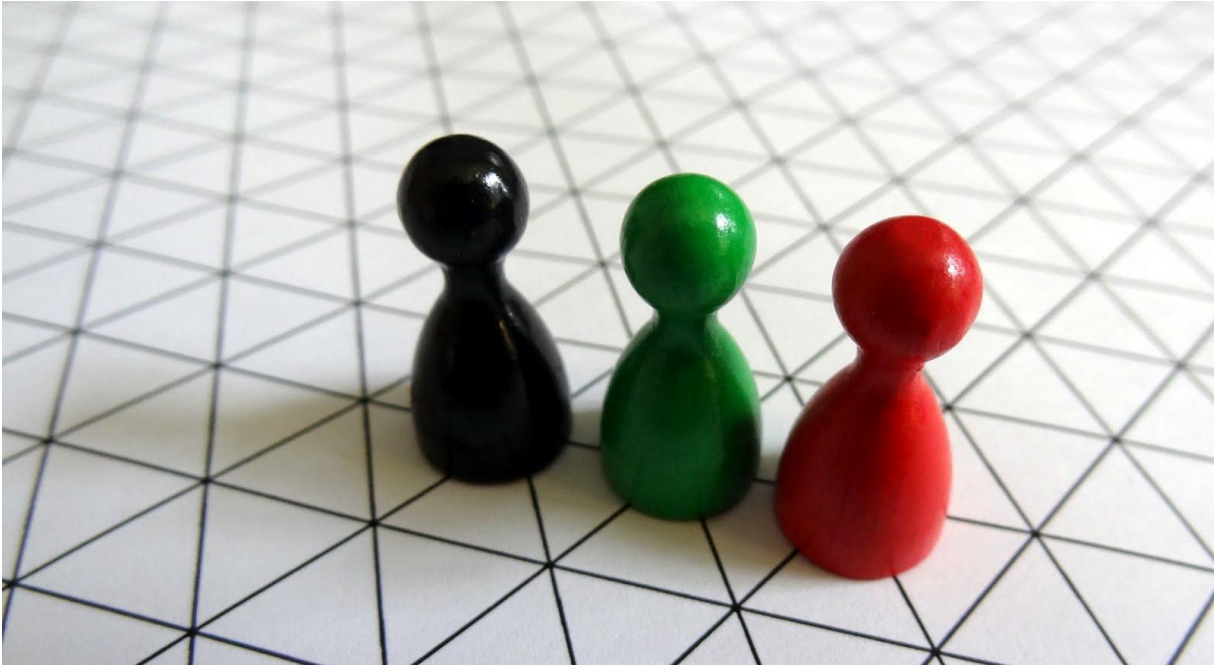
Since the players don't have any velocity, each player is only able to move along an edge of a triangle (shown in the image left).


Instead of moving the figure, the player places a second figure onto the map (right image). The distance between the old figure and the new figure now defines the velocity of the player.

In order to compute the new position the player adds the current velocity vector to the last position of the player by placing a third figure.

From this point the player can change his movement by one triangle edge which can be understood as acceleration.

Firstly, the velocity vector was doubled, to compute the new position. From there, the acceleration of the player was added.
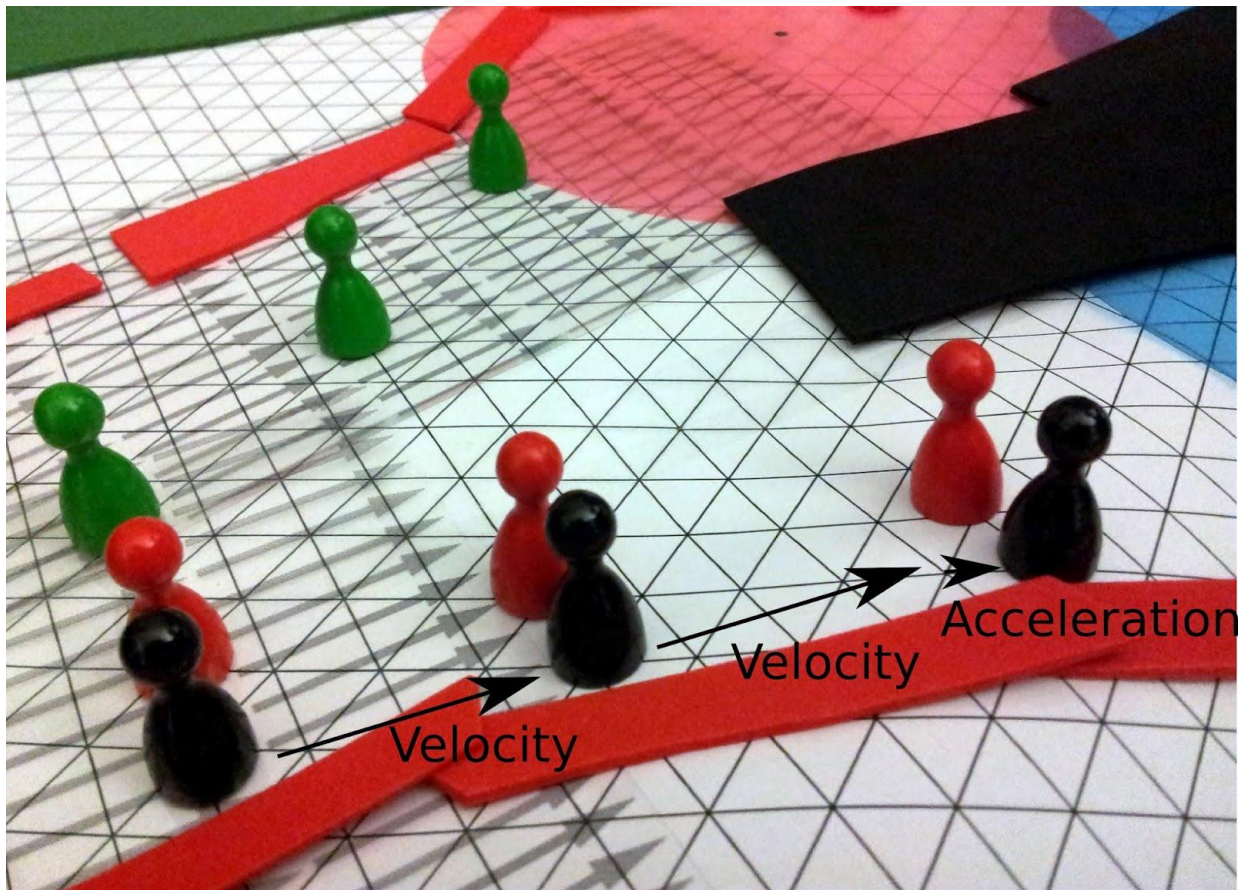
If the figure is in a flow field, it has to be moved by one triangle edge in the direction of the field. If the player has a charge, he will either get attracted or repelled by the pole by one triangle edge depending on the center position of the pole. The distance from the pole does not matter in this simplified board version of our future game.

In the image below we see the applied forces on the black player. Firstly, his current velocity vector is added. Since the player has a negative charge, he gets attracted to the pole. In order to negate the influence of the flow field and to avoid colliding the wall, the player has to move his player in the opposite direction of the flow field.
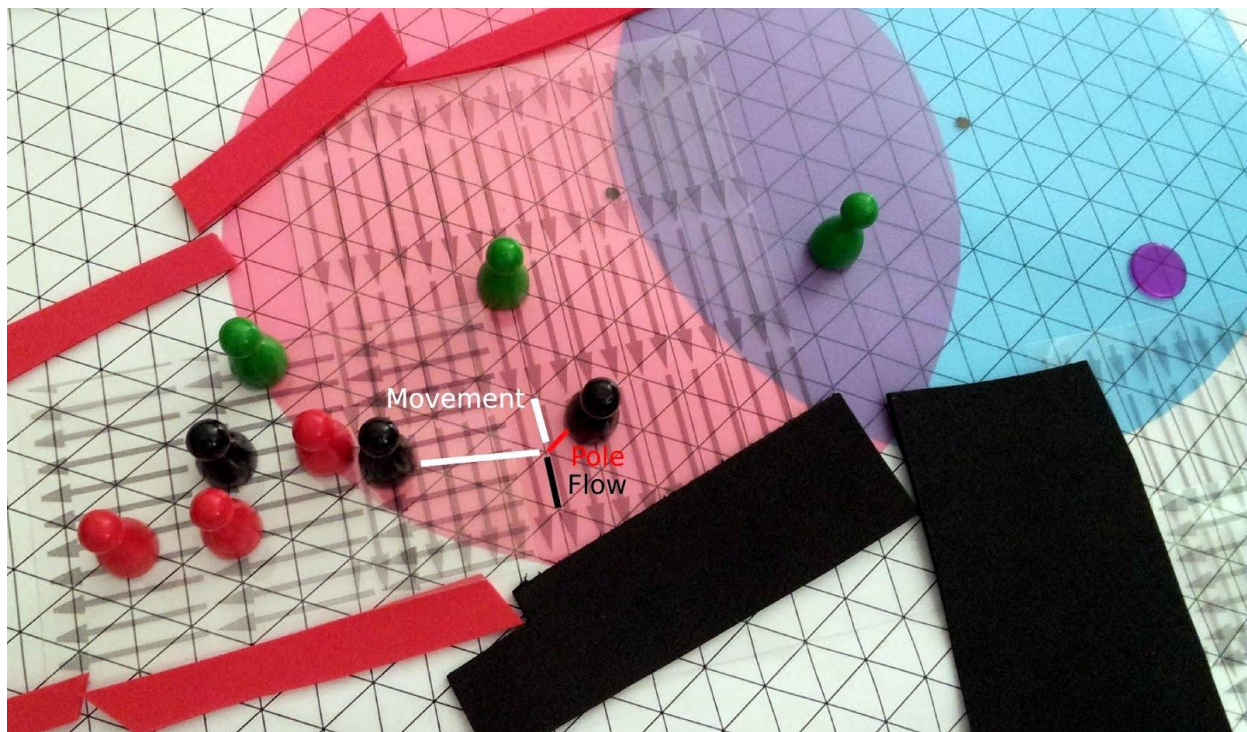

Walls

Walls should be avoided. If a player collides with a wall (i.e. his final position is intersecting a wall) he loses one coin and all his previous velocity. If a player has no velocity and collides with a wall, he does not lose any coins. This allows the player to get away from a wall even when he is pressed to the wall by a perpendicular flow field.
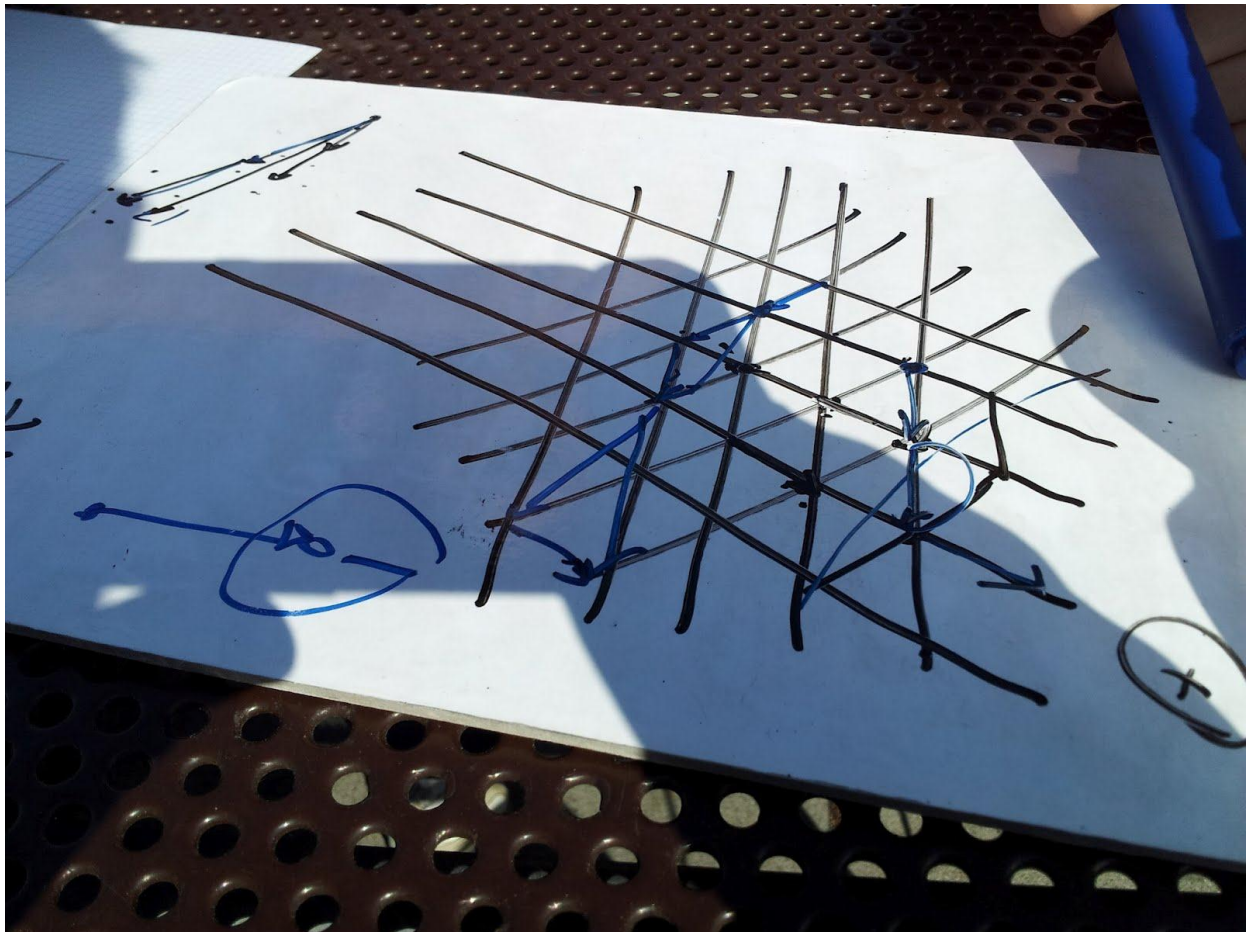
Charge

The charge can be changed once at the beginning of each round and already effects the current round.

The player cards showing positive and negative charge:
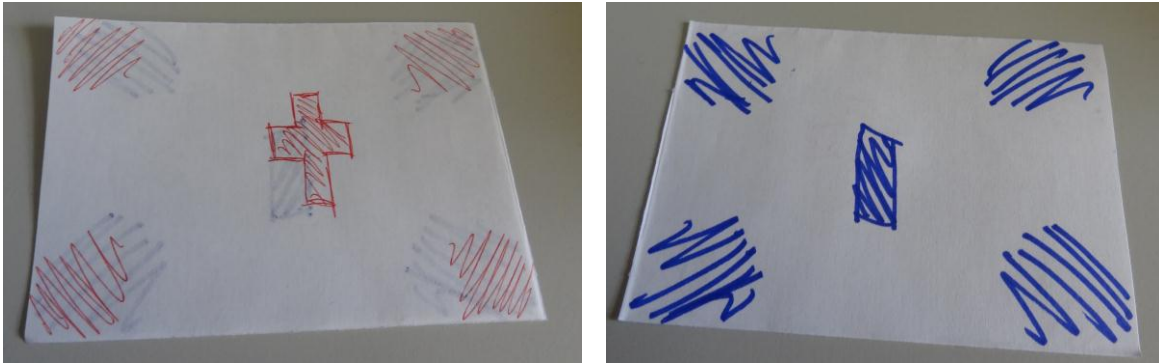
Early Prototype

Insights

Playing the prototype was fun and challenging. The levels look easy but if one is not careful, there is always a wall to crash in. In the first version of the game, the initial forces were computed at the old position of the player. This turned out to be rather complicated and less clear. Therefore, we changed it to the end of a movement.

We also realised, that we should focus on the multi-player aspect of the game. This makes it easier in terms of level design and creates a competitive aspect.