A game for which a deck of elementary particles can be used: THE EIGHTFOLD PATH

Introduction
- Games that use a deck of cards with elementary particles
- Proposition for a new game which utilises the concept of The eightfold path

What is the eightfold path in physics?
- Property of symmetry in the representation of baryons and mesons
- It was independently observed by Murray Gell-Mann and Yu'val Ne'eman in 1961**
- Such grouping often results in sets of eight (or more) hadrons

This is a board (card) game!
- Boards correspond to the baryon and meson hexagons according to the eightfold path with three additional circles at the bottom.

Hadrons can be represented in suitable symmetric groups according to their charge (Q) and strangeness (S) properties

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**RULES AND COURSE OF THE GAME**

**What is the main goal?**

To fill the designated circles in hexagons with the corresponding cards, so that within each circle, the total strangeness (S) and electrical charge (Q) are equal to the markings.

- Players are **arranging hadrons**

- The 3 lower circles (located outside the hexagon) must be filled with **4 lepton/anti-lepton cards** so that the total Q and S also correspond to the markings.

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**Level 1: Beginner ★★★★★**

- Names of baryons and mesons can be written on the boards.

**Level 2: Intermediate ★★★★★★**

- Players **do not** have pre-written hadrons on the board.
- Instead, they must place them on the board themselves based on their Q and S.

- It is important to be fast and skilled at recognizing potential **opportunities** to assemble the appropriate hadron that is left unfilled on the board.

Players need to be familiar with the individual S and Q of each elementary particle in the deck, as the total strangeness and electric charge of each hadron (or group of leptons) is equal to the sum of S and Q of all individual particles that make it up.
**Rules and course of the game**

- The game is intended for **2 to 4 players**.
- At the beginning, it is necessary to divide the cards from the deck into **three piles**.
- Then, each player must take **two cards** from each pile.
- Players hold their cards in their hands so that only they can see them.
- After that, the first part of the game begins!

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**Part 1 - Assembling leptons, antileptons and mesons**

- The game is played in rounds (for example, in clockwise order).
- In each round, each player has **two possible choices**:
  - To discard one of their own cards and draw a new card from one of the piles.
  - To place cards (correctly) in an empty circle within the hexagon.
- For a correctly filled circle, **1 point** is awarded...and there are also penalties!

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**Part 2 - Assembling leptons, antileptons and baryons**

- After the first part is finished, players must **return all the cards** and make **two piles**.
- Rules, choices and scoring are **very similar** to the first part of the game!

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The cards are shuffled and arranged according to the type of elementary particles, but they are faced down, so the players cannot see them.
Conclusion

For whom is the game intended, and what can we learn from it?

- Various ideas and concepts of particle physics (which may seem very complicated at first), can be brought closer to players of different ages and backgrounds through fun and social interactions.

- In addition to existing games, there is a particularly interesting and significant possibility of creating new and diverse games centered around the existing deck of cards.

- As a result, these games can continue to be developed in parallel with new physical discoveries and theories.