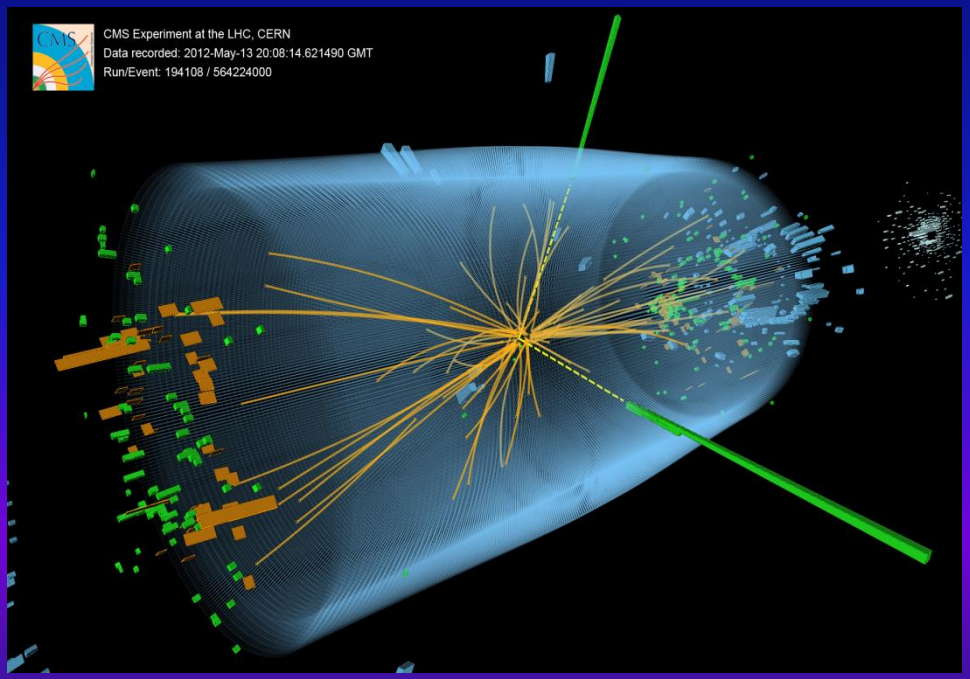
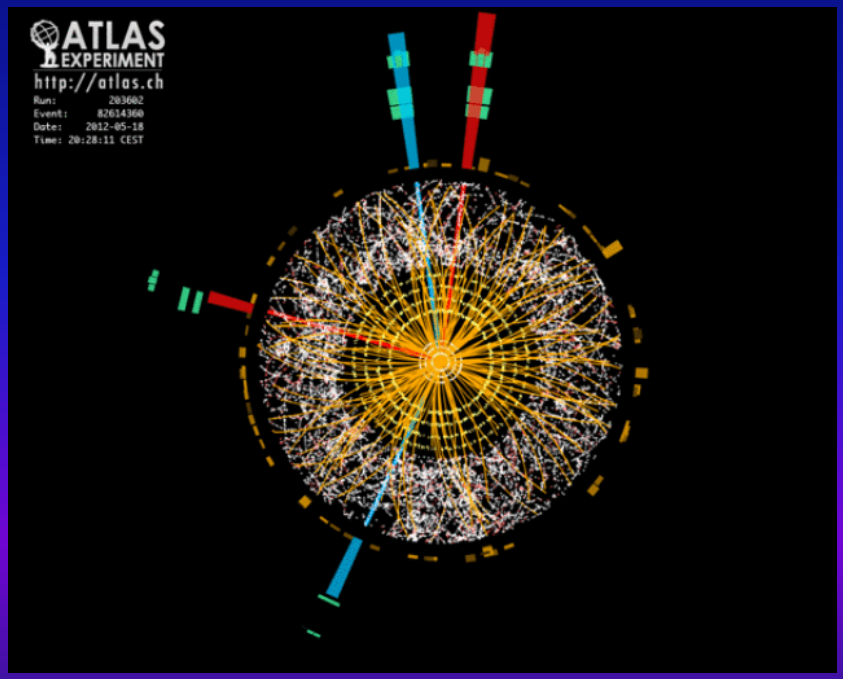
# Quark Matter Card Game Competition: Berze Hits!

T. Csörgő[1,2] , T. Novák[2] és Judit Törökné Csörgő[3,4]

[1] MTA Wigner, Budapest, Hungary
[2] Károly Róbert University College, Gyöngyös, Hungary
[3] Berze Science Club, Gyöngyös, Hungary
[4] ELTE, Budapest, Hungary

Make your own Higgs boson – using Quark Matter!




Fizikai Szemle 2013/6. sz. 205. o., 2013/7-8. sz. 252. o.

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# ORGANIZERS, LOCATION, DATES

Organizer: Circles of Knowledge Club

http://sites.google.com/site/tudaskoerei/

Topics: Quark Matter Card Games Competition

Location: Berze Nagy János Middle School, Gyöngyös

http://berzelab.berze.hu/

Dates:

November 25, 2014, 15:00 – Training course I. (non-Berze)

November 26, 2014, 14:30 – Training course II (Berze)

December 9, 2014 14:30 – Competitions !

# BERZE + ELTE STUDENT INNOVATION: Quark Matter Card Game

**By now:**

**INVENTION, patent, PRODUCT**

**66 Cards, 4 games:**

- **Quark Matter**
- **Quark Matter Memory**
- **Find your Higgs!**
- **ANTI**

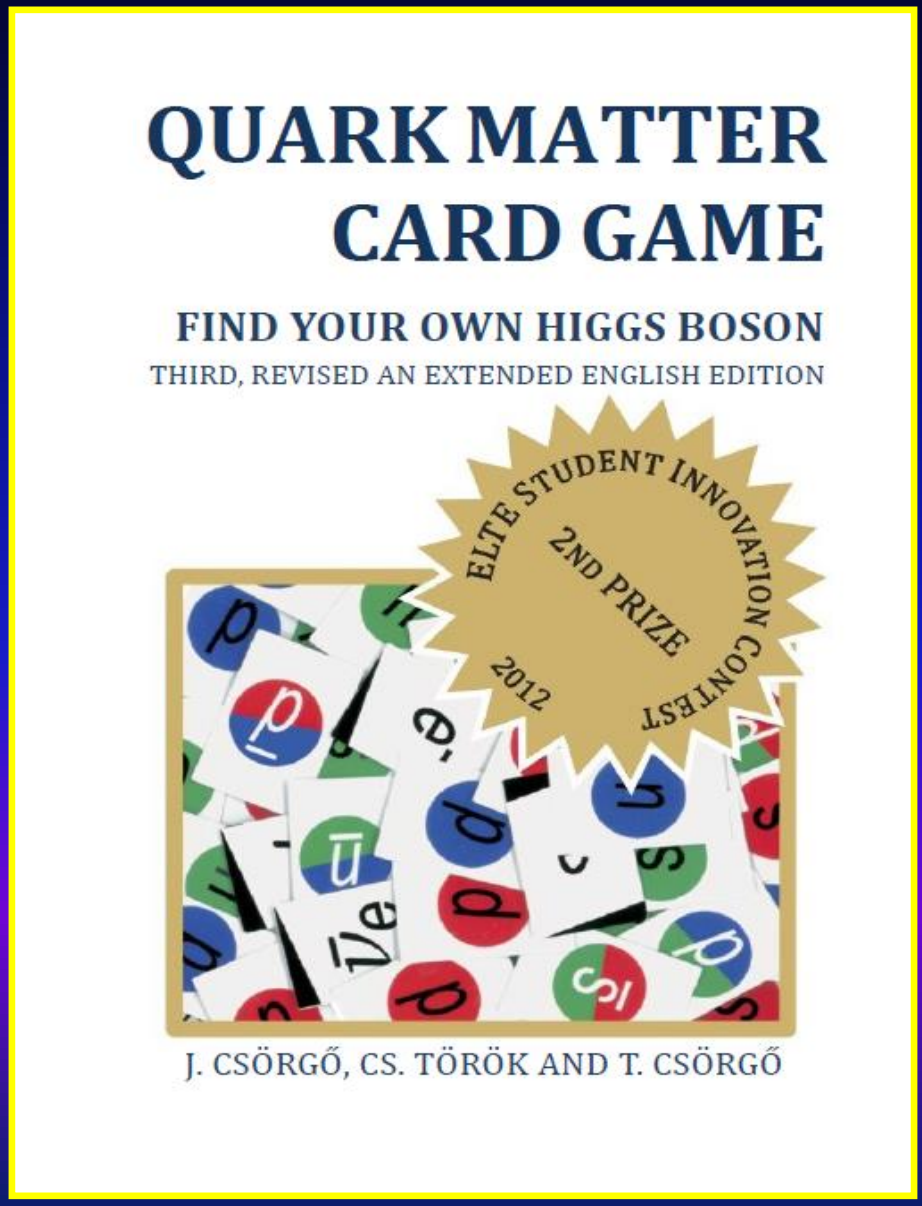
**3rd English edition:**

**e-book + deck of cards**

**2nd Hungarian edition:**

**book-set including deck**

**http://www.lulu.com/**



# INTERNATIONAL PRESS, EXAMPLES

## SUBATOMIC SHUFFLE

Prefer particle physics to poker? Pick up a deck of the Quark Matter Card Gan
both. Instead of kings and queens, the cards feature quarks (up, down, and st
trons, and their neutrinos; and antiparticles for all.

Hungarian high school students Csaba Török and Judit Csörgő invented
father, Tamás, a physicist at the KFKI Research Institute for Particle and
Budapest. The simplest game is "Anti," in which players quickly identify par
combinations, bearing in mind a quantum-mechanical property called "col
color of the card. It's an abstract concept, but "even children who cannot read
Tamás says. For adult players, he recommends "Quark Matter," which start
piled to represent the quark–gluon plasmas physicists cook up at Brookhaven
Relativistic
(RHIC), where
PHENIX expe
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ncemag.org SCIENCE VOL 331 14 JANUARY 2011
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Story Archives

## Quark Matter at RHIC: It's in the Cards

### Students and RHIC physicist develop quark-gluon plasma card game

By Karen McNulty Walsh | January 4, 2011

Happy New Year! Like the sprays of confetti and streamers exploding in Times Square at midnight on December 31, millions of subatomic particles will soon be streaming from heavy ion collisions at RHIC, Brookhaven Lab's Relativistic Heavy Ion Collider.

RHIC/PHENIX collaborator Tamás Csörgő, Csaba Török and Judit Csörgő with their card game at the exhibition in the "Palace of Wonders" after the ceremony of the 19th Hungarian National Contest for Junior Innovators and Scientist (Budapest, Hungary, June 10, 2010).

Linking subatomic particles with New Year's Eve celebrations may not be so strange: Two years ago, a group of Hungarian secondary school students rang in the New Year while playing with particles, literally. The group, which included Judit Csörgő, daughter of RHIC/PHENIX collaborator Tamás Csörgő, and her friend Csaba Török, were at a New Year's celebration, playing with the first edition of a set of cards invented by Csaba as an entertaining way to learn about subatomic particles and their interactions. The game, more formally developed and tested by the students with mentoring help from Tamás, won an honorable mention in a 2010 Hungarian competition for junior innovators. It is now available for purchase as an e-book, with cards included, on Lulu, currently with Hungarian directions. An English version is in the works.

# MEDIA ATTENTION, PRIZES, TESTS

asimmetrie.it
rivista dell'Istituto Nazionale di Fisica Nucleare
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## [as] illuminazioni
## Una partita a quark.

Quark e leptoni, e ancora elettroni, muoni e neutrini... parole che possono suonare incomprensibili all'orecchio dei non addetti ai lavori. E invece non si tratta solo di roba da fisici, ma anche di alcune delle sessantasei carte che compongono il mazzo del gioco *Quark Matter*, ideato dai due inventori ungheresi adolescenti, Csaba Török e Judit Csörgo, con la supervisione del papà Tamás Csörgo, ricercatore presso l'esperimento Totem del Cern di Ginevra.
Con sei diversi giochi di carte (*ANTI*, *Quark matter*, *Riveliamo le particelle!*, *Sciami cosmici*, *Memory della quark matter* e *Trova l'Higgs!*) è possibile entrare in contatto con il mondo dei principi della fisica delle particelle all'insegna del divertimento. E non solo, ad esempio, con Trova l'Higgs! i giocatori potrebbero anche arrivare a sentire lo stesso brivido provato dagli scienziati, quando hanno trovato l'ultimo elemento mancante del modello standard: il bosone di Higgs, la particella, la cui esistenza è stata ipotizzata nel 1964 da Robert Brout e dai recenti premi Nobel François Englert e Peter Higgs e verificata sperimentalmente ben quarantotto anni dopo dai ricercatori dell'acceleratore Lhc del Cern.

## [as] asimmetrie16 [1964]

aprile 2014

### Indice

# QUARK MATTER (CARD)GAMES

**2011: Four basic games**

1. ANTI (in the booklet) → Individual competition
2. Quark Matter (in the booklet) → Team game, preliminaries
3. Cosmic Rays (in the booklet)
4. Let's Detect! (in the booklet)

**2012: Zimányi Nehézionfizikai Téli Iskola, Budapest**

5. Quark Matter Memory: arXiv:1303.2798
   → Team game, semi-finals
6. Find Your Own Higgs Boson: arXiv:1303.2732
   → Team game, finals
7. L. P. Csernai L, T. Csörgő, M. Vargyas:
   Particle Poker, Bergen, Norway, 2012,
   Jyvascyle, Finnland, 2014

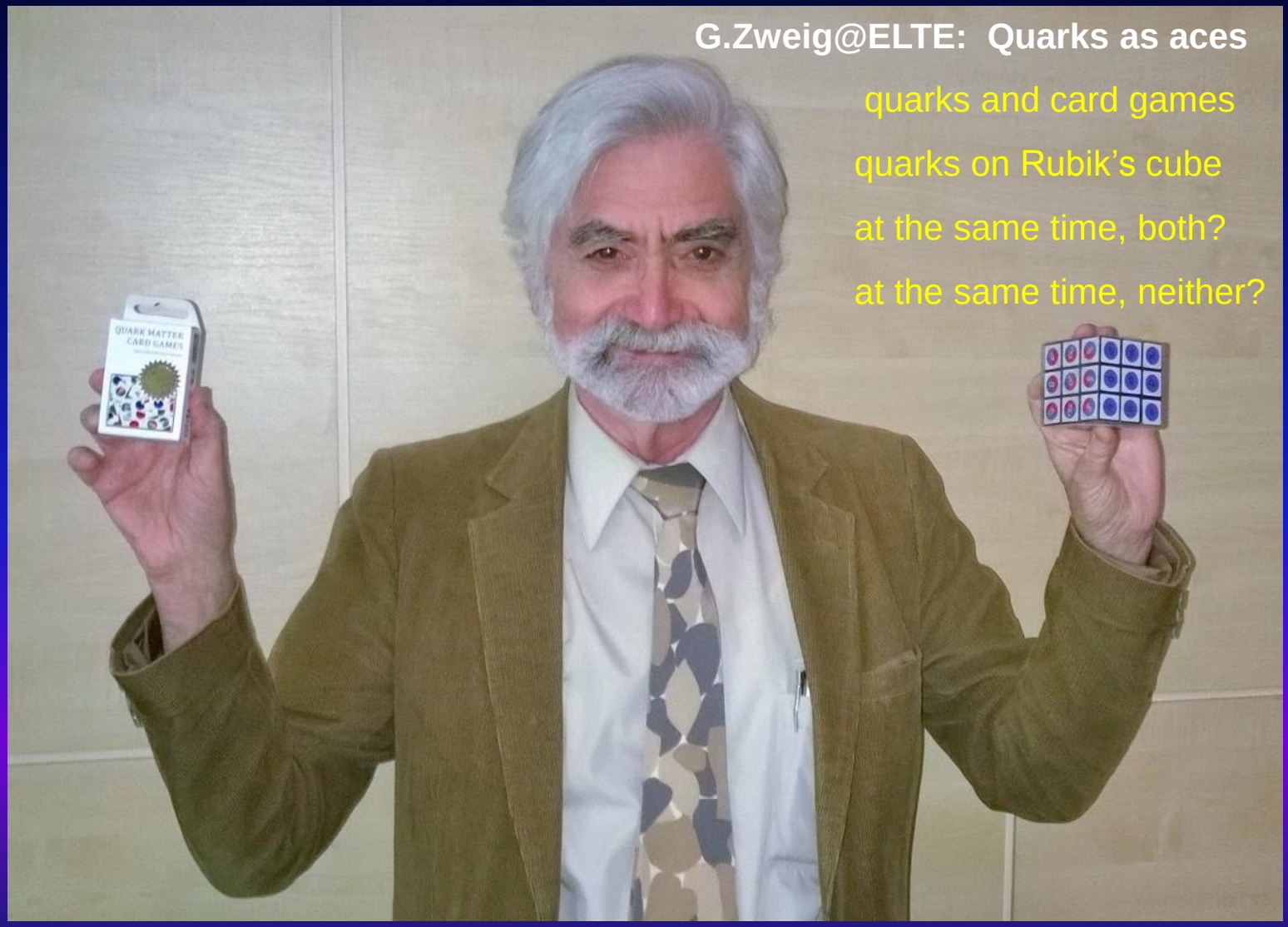
**2013:**

8. Ágota Lang: Természet Világa, March 2013, p. 121.
   Quark Wars: T. Novák @ WPCF 2014
9. T. Novák, T. Csörgő:
   Particle 66: BerzeTÖK Summer Camp, Visznek, 2013
10. T. Csörgő, Particle MAHJONGG – Mártély Summer Camp

**2014:**

11 – 13. Blind Find, Decuplett, Particle Hits! Etc…

# QUARKS IN THE HANDS OF ALL INCL. THEIR INVENTOR



# CALL DETAILS: GAME TYPES and AGE GROUPS

| DETAILS OF CALL | INDIVIDUAL: ANTI | GROUPS OF 3<br>Preliminaries: QUARK MATTER<br>Semi-finals: QUARK M. MEMORY<br>Finals: FIND YOUR HIGGS! |
|---|---|---|
| **Quark cards** (colors) | Classes 1-4 | (age 6-9 years) |
| **Lepton cards** (black/white) | Classes 5-8 | (age 10-13) |
| **All cards** | Classes 9-12: | (age 14-17) |
| **All cards** | Absolute cathegory: | (FAMILY, friends, teachers, relatives, PhDs, professors…) |

**Registration**: Judit Madai, madai.berze@gmail.com

**Deadline**: December 9 (next Tuesday) 12:00

# PICTURES FROM PREPARATORY TRAINING

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# FINDING THE FIRST HIGGS DECAY

# REWARDS