

Make Your Own Higgs Boson Quark Matter Card Games – Particles, Playfully

T. Csörgő¹, Cs. Török^{2,3}, J. Törökné Csörgő^{2,3}

¹ Wigner Research Centre for Physics, Budapest, Hungary

² Science Club of Berze Secondary School, Gyöngyös, Hungary

³ ELTE, Budapest, Hungary



Quark Matter Card Game Berze Science Club Fun for All

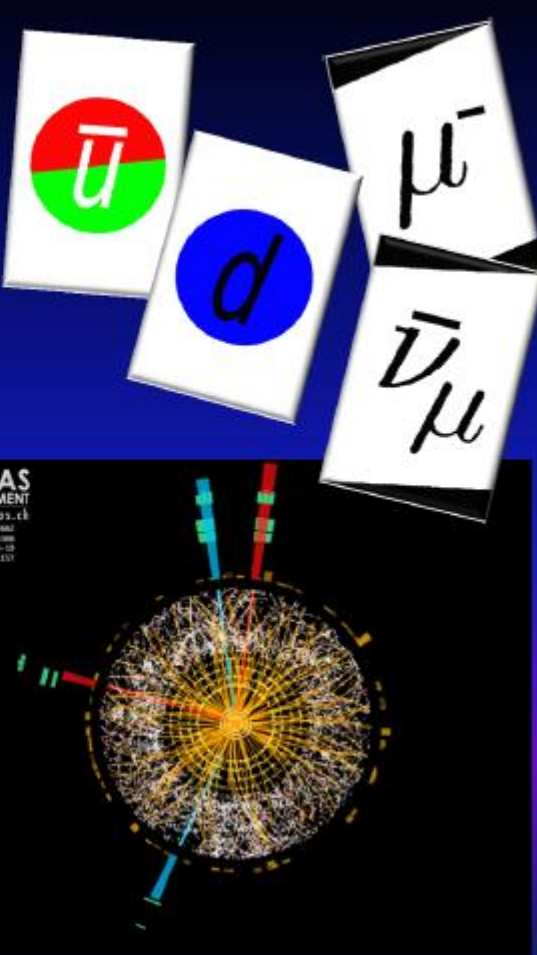


<http://arxiv.org/abs/arXiv:1303.2732>

<https://sites.google.com/site/particlescardgame/>

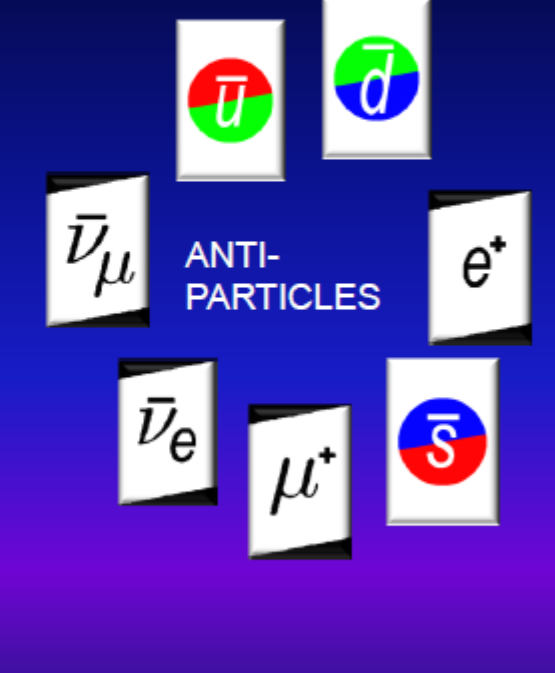
HIGGS BOSON – ON YOUR OWN, MADE AT HOME

T. Csörgő
tamas.ferenc.csorgo@cern.ch
[arXiv:1303.2732](https://arxiv.org/abs/1303.2732) [physics.pop-ph]
[arXiv:1303.2798](https://arxiv.org/abs/1303.2798) [physics.pop-ph]



ELEMENTARY PARTICLES - PLAYFULLY

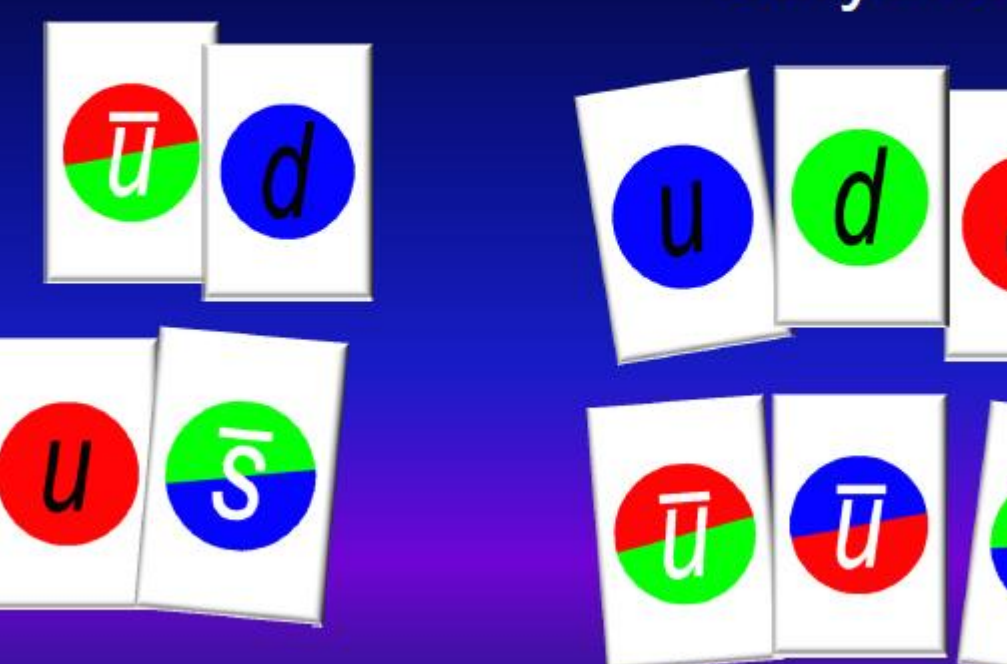
Three generations of matter (fermions)		
I	II	III
Quarks	Quarks	Quarks
Leptons	Leptons	Leptons
Charged bosons	Charged bosons	Charged bosons
Neutral bosons	Neutral bosons	Neutral bosons



SU(3) COLOR vs OPTICAL COLOR

Mesons

Baryons



STUDENT'S IDEA: PARTICLE CARDS

By now:
INNOVATION, PATENT, PRODUCT

66 cards, first 4 games:

- ANTI
- Let us detect!
- Quark Matter (BNL)
- Cosmic Showers

1st edition: an e-book for
„Meet the Scientist” opening talk
Hungarian → English, online at
<http://www.lulu.com/>



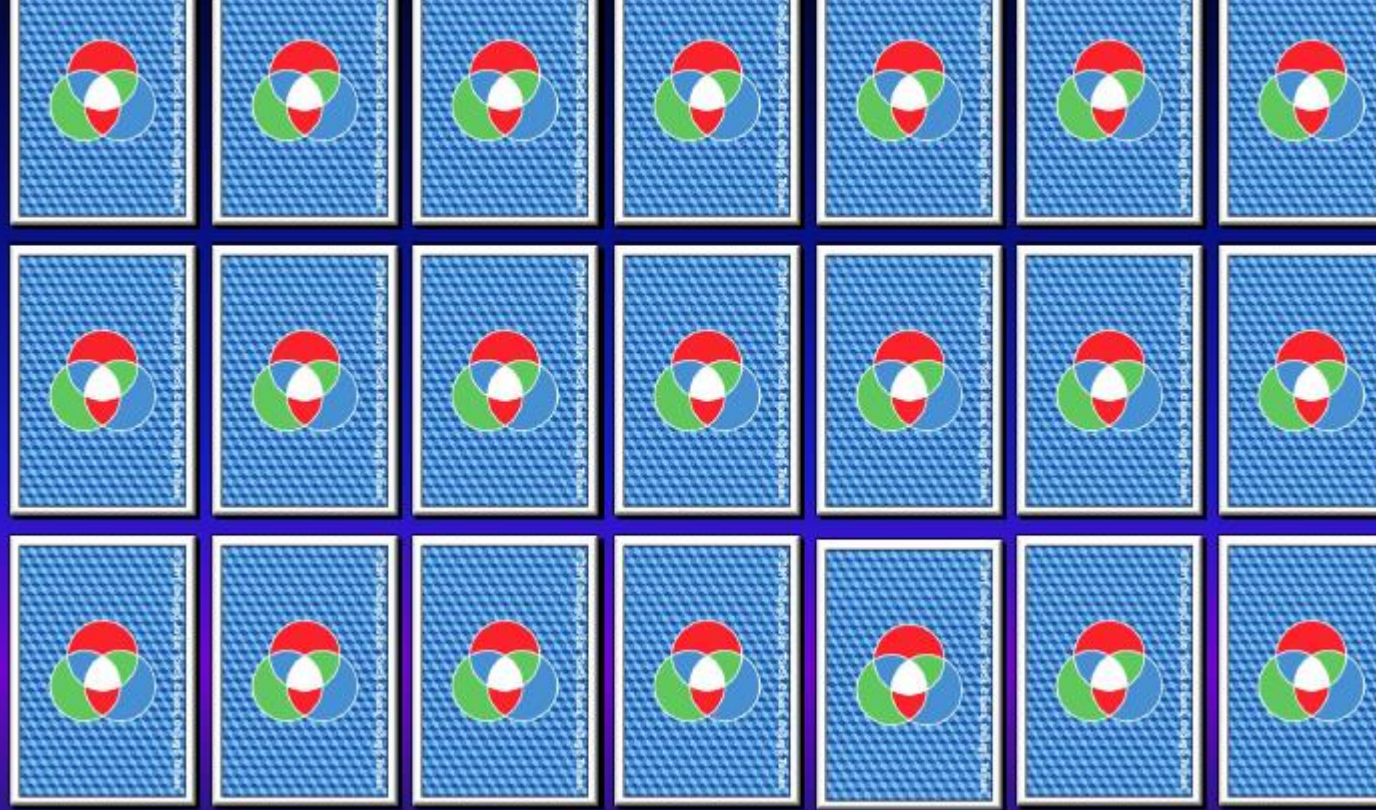
INTERNATIONAL PRESS REPORTS



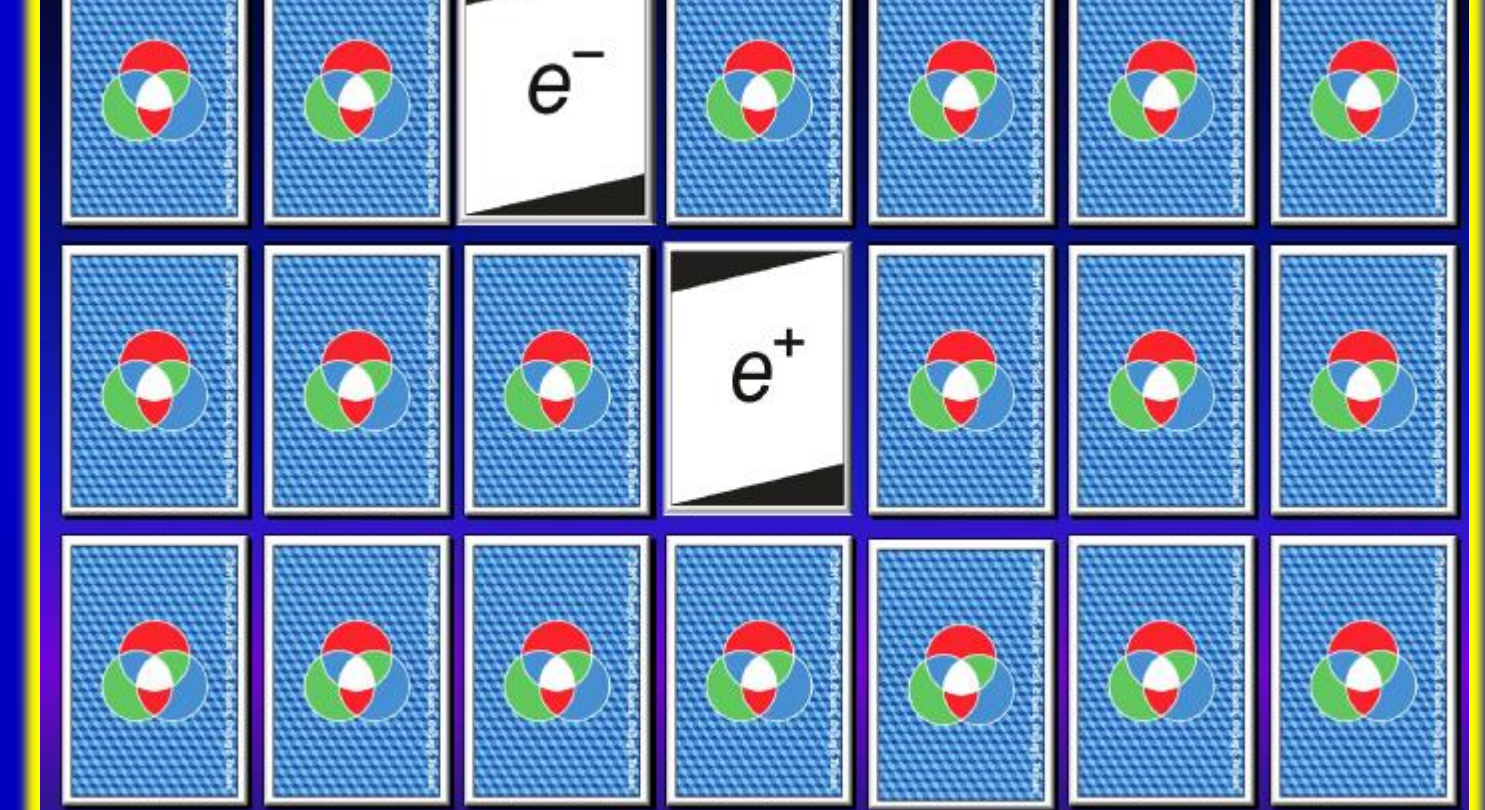
CERN, AWARDS, TESTS



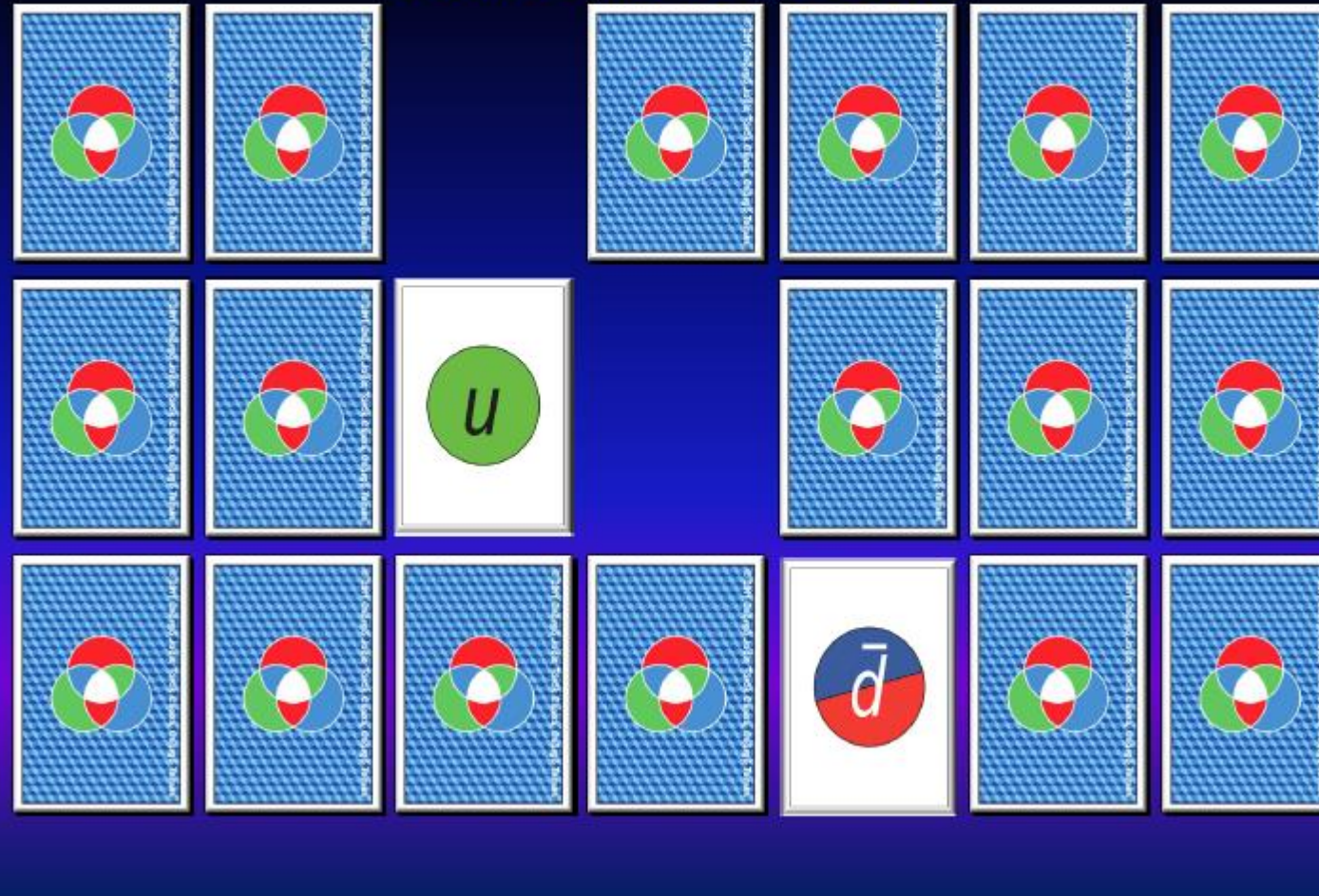
FIND A HIGGS - A MEMORY GAME



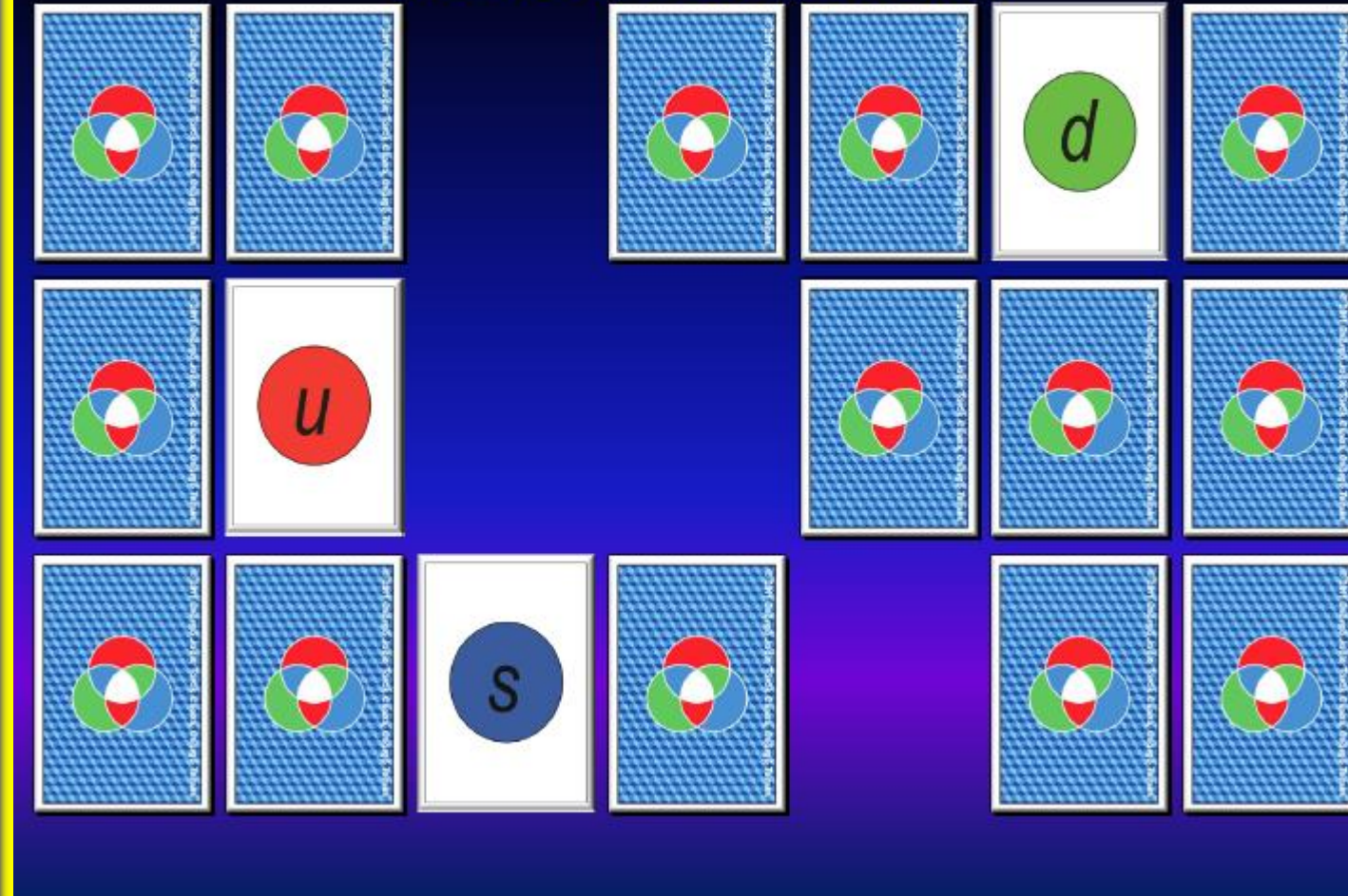
FIND A LEPTON-PAIR



FIND A MESON



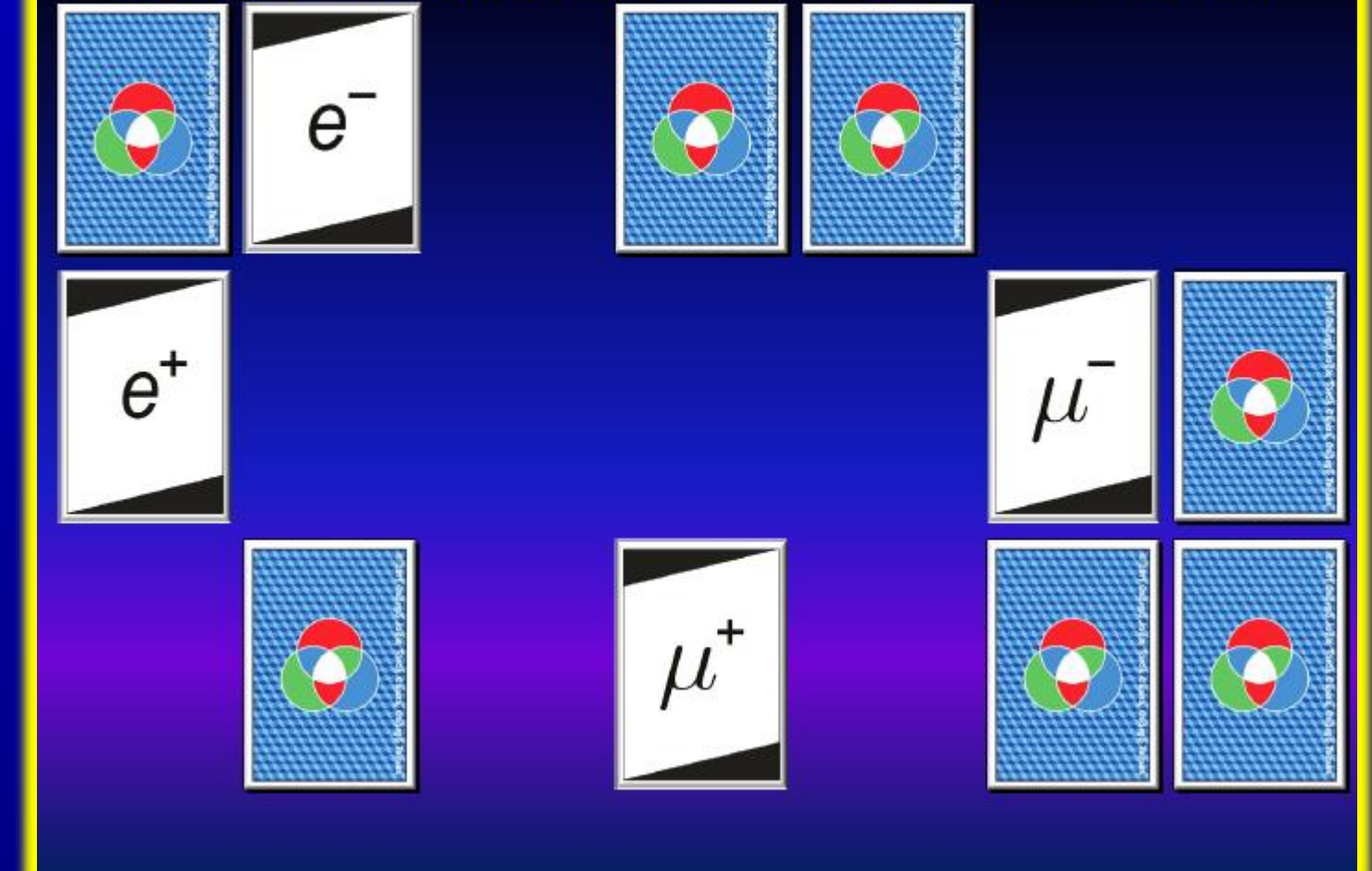
FIND A BARYON



FIND AN ANTI-BARYON



FIND A HIGGS: $H^0 \rightarrow Z^0 Z^0 \rightarrow \ell^+ \ell^- \ell^+ \ell^-$



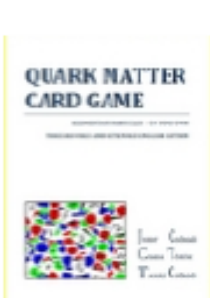
3rd ENGLISH ED. IN BNL'S STORE

Lulu Author Spotlight

Brookhaven's Store

QUARK MATTER CARD GAME

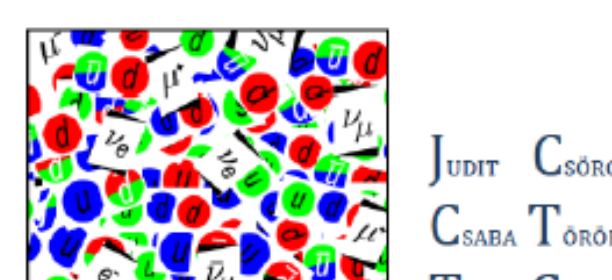
ELEMENTARY PARTICLES - ON YOUR OWN
THIRD, REVISED AND EXTENDED ENGLISH EDITION



Quark Matter
Card Game
By Judit Csörgő, Csaba Török,
Tamás Csörgő
Paperback List Price: \$27.94
\$19.50 You Save: 30%
Ships in 3-5 business days



Quark Matter
Card Game
By Judit Csörgő, Csaba Török,
Tamás Csörgő
eBook (PDF) \$19.50
Download immediately



First (and only) item, Brookhaven's lulu.com store

SUMMARY

Science Club + PHENIX + TOTEM

Student and science outreach project:

INNOVATION, patent, PRODUCT

Recently: 3 OPEN ACCESS Science Games

Higgs-boson – on your own

Memory of Quark Matter

CERN Open Days (Sept 27-29, 2013):

POKER OF QUARKS AND LEPTONS

Plans: Translation to national languages

Experiment specific games for

ATLAS, ALICE, CMS, LHCb, LHCb,

MoEDAL, PHENIX, STAR, TOTEM

YOUR outreach support requested

To reach out, really...

Thank you for your attention!



TOTEM @ CERN Open Days, 2013/09/28-29

T. Csörgő, Cs. Török, J. Törökné