

Ideas for community festival: particle physics for babies, toddlers & children

Caterina and Dee-Ann chat

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Main idea & goal

Age group: 1.5 - 3.5 years old / 3.5+ (depends on space)

- Scientists talk to parents while children play with particle physics-themed material
- Book-reading corner
- Corner for play of older children
 - Main goal: lower barrier to entry, particle physics is not rocket science if there are elements that can be shared with toddlers/children
- Table with material about examples of women/mothers in STEM at different career stages that parents can look at (liaise with parents network at UofM)
 - Secondary goal: give examples of role models for underrepresented categories in the field (about 30% women in particle physics, decreasing with career stage)

Babies and toddlers: activities

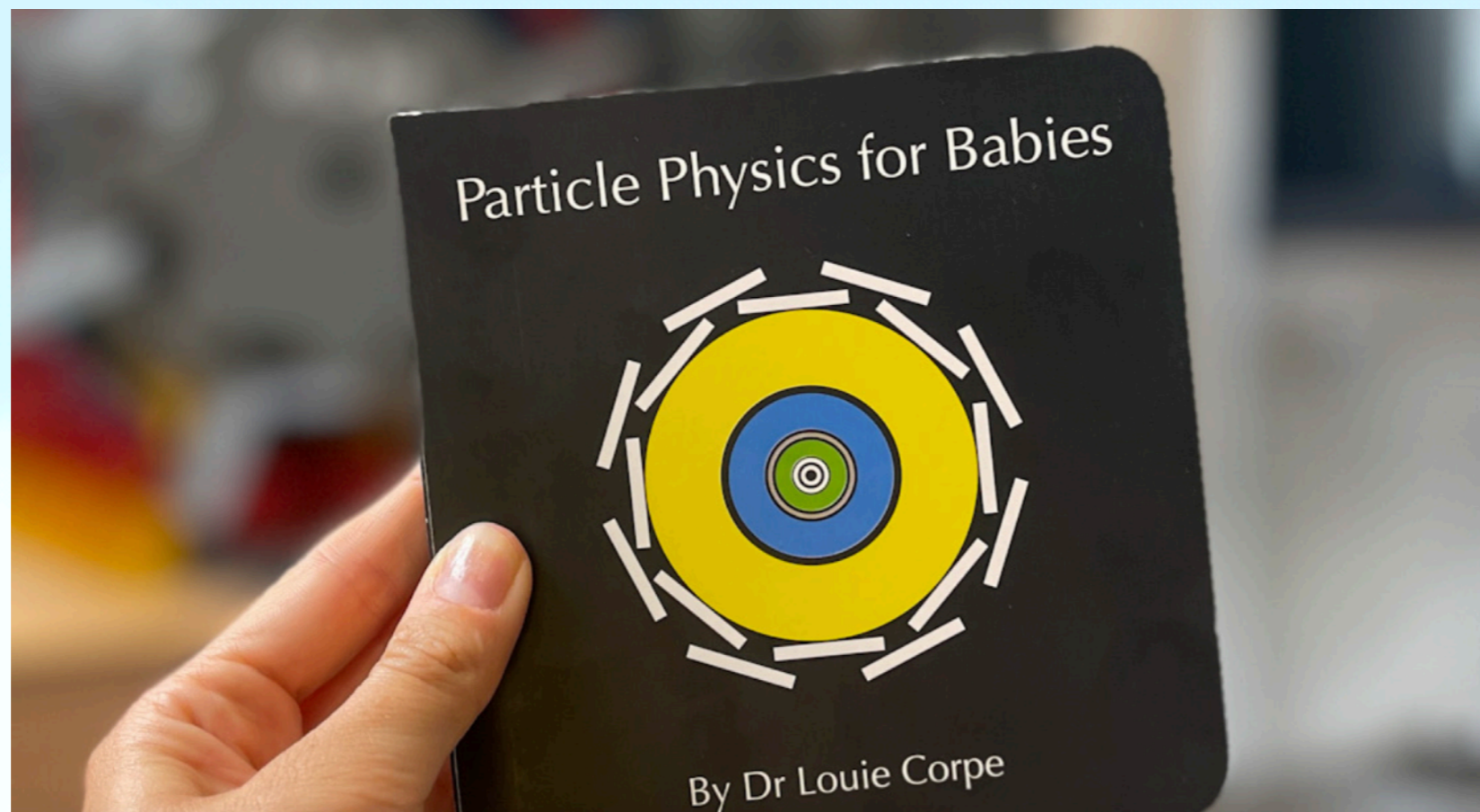
Age group: 1.5-3.5 years old

- “Tuff tray” [[Example link](#)]
- Content:
 - Colourful plastic balls and pom poms with particle names on them
 - Names of particles on laminated paper
 - Stars / a black hole (probably just a black ball with eyes drawn on them)
 - Names of new physics theories in astrophysics on laminated paper
 - Toy computers
 - Names of simple machine learning algorithms (or simply “machine learning” and “artificial intelligence”) on laminated papers
- “Filler”: sand (non-toxic, specific for purpose)
- Sorting activity [[Example link](#)]
 - Provide some sets of colourful balls with different characteristics, babies/toddlers will have to align them or sort them into containers
 - No objects are large enough to be eaten
 - Use a mat, make more than one station, keep it on the floor

Books

Particle physics for babies

- Written by Louie Corpe, a physicist visiting the week before <https://louiecorpe.com/particle-physics-for-babies/>



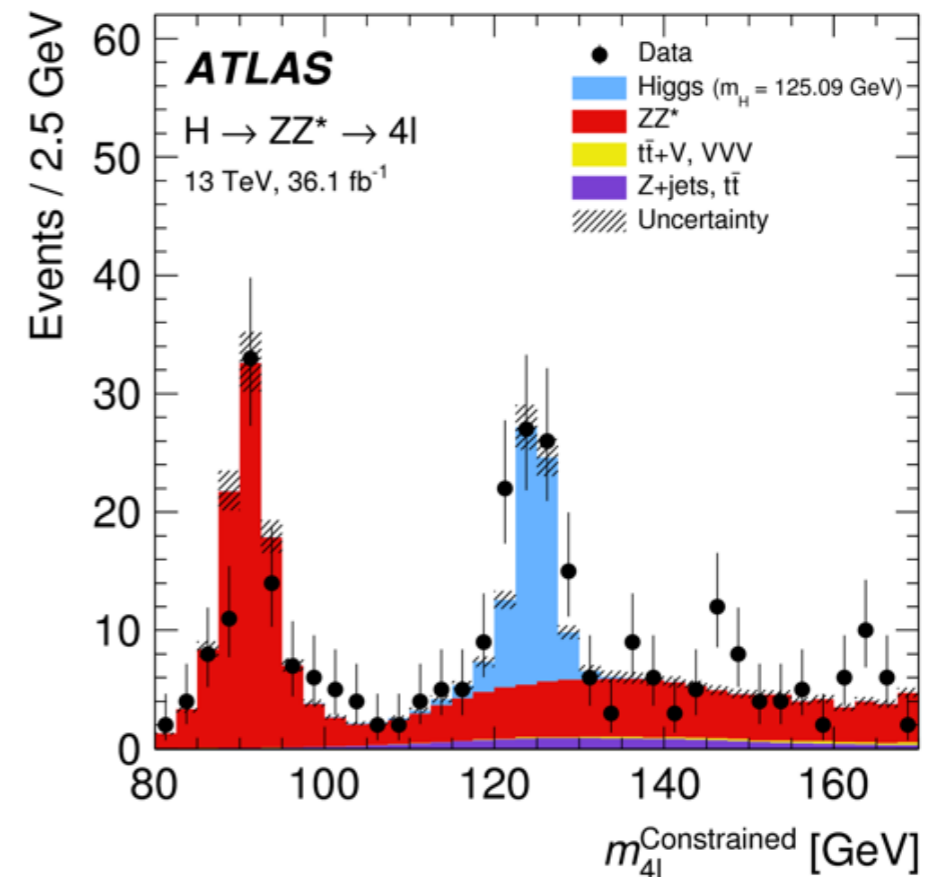
- Other books: [Neural networks for babies](#)
- Keep books as a conversation points
- Have some posters (one with the LHC background, women in STEM)
 - 1m wide x 2m tall (tabletop could be in front?)

Children: activities

Age group: 3.5+ years old

- **Make your own car/ball accelerator [no space this time]**
 - Take toilet paper tubes, link them together
 - Include hard bands in some of the tubes to hit the car, to hit particles and give the acceleration
 - Put (light plastic) cars or balls in them
 - Move them around by hitting with the hard bands
 - [this is a thought experiment, I need to make a prototype first :) but we did this [meatball collider](#) and this is much simpler!]

- **Discover the Higgs boson with megablocks**
- Reproduce the Higgs boson discovery plot using Duplo/megablock (collaborative game)
- Table: 6 foot x 2 foot
- Alternative: B&W prints for coloring, provide some to take home



Spaces & tables

Space: 6ft x 2ft

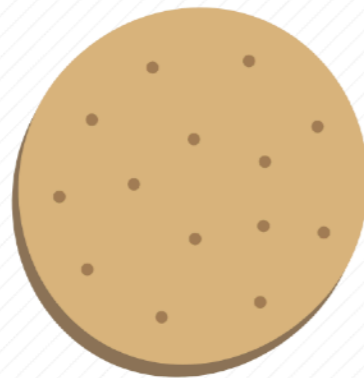
- 4 spaces
- 1 table
- 4 posterboards
- No power needed
- Bringing:
 - Tuff tray & content
 - Big mat

Children: activities

Age group: 3.5+ years old

- Proton cookies [\[link\]](#) - not for this time (food allergies)

BUILD YOUR OWN PROTON COOKIE *PRÉPAREZ VOTRE PROPRE COOKIE-PROTON !*



- 1.** Start with a plain biscuit.
Prenez un cookie nature.



- 2.** Spread on some gluon icing.
Recouvrez-le d'un glaçage de gluons.



- 3.** Add quarks.
Ajoutez des quarks.

Protons have two 'up' quarks and one 'down' quark. Quarks come in different colours. Inside the proton there is always one red, one blue and one green quark.

Les protons contiennent deux quarks up et un quark down. Il existe plusieurs couleurs de quarks. Dans un proton, on en retrouve toujours un rouge, un bleu et un vert.