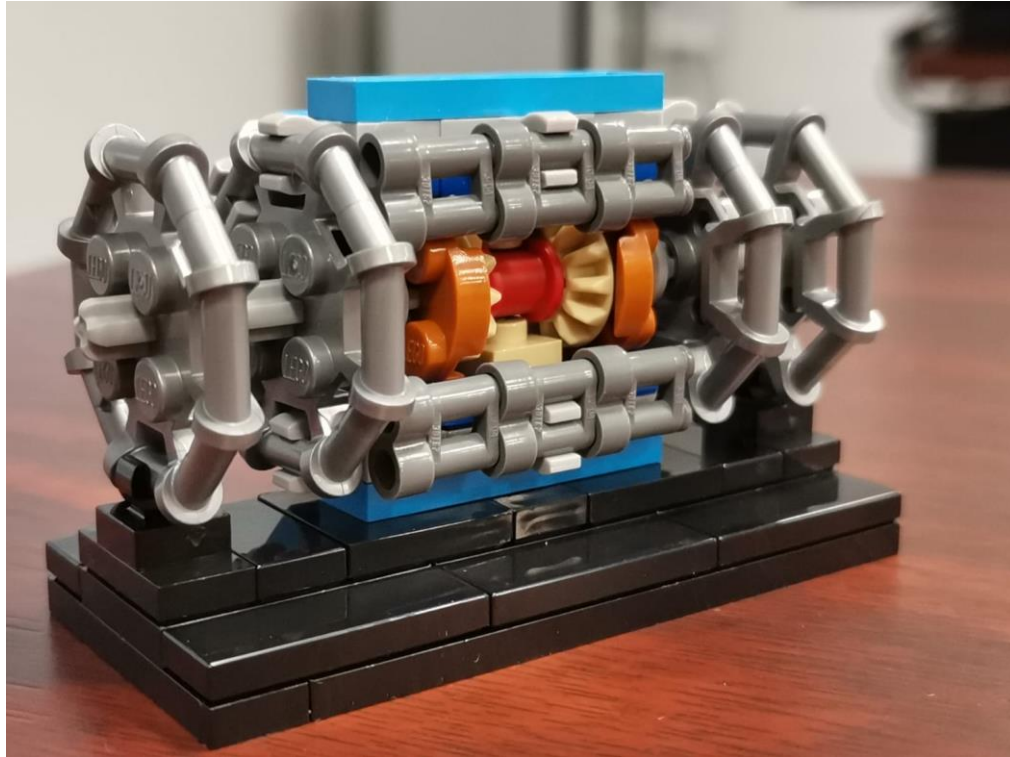


Particle Detectors

HST2024 Study Group 9 - Pluto

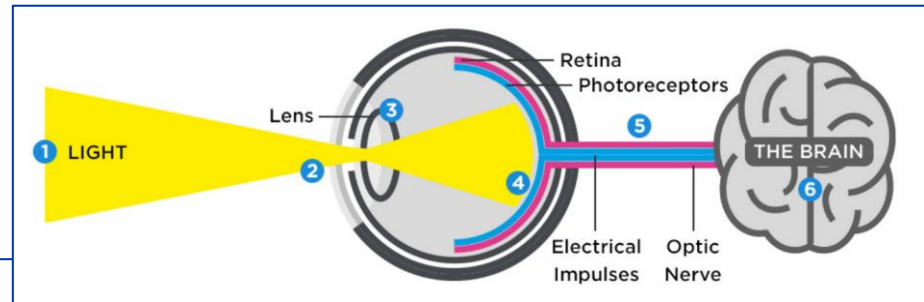


Particle Detectors



Curriculum & Classroom Connections

- The eye.
- Mobile phones
- Link between classical mechanics and contemporary physics.
- Electromagnetism and right hand rule.
- Semiconductors
- Radioactivity
- Structure of matter (Higher Levels)
- The nature of science
- Particles, fields and the property of charge.



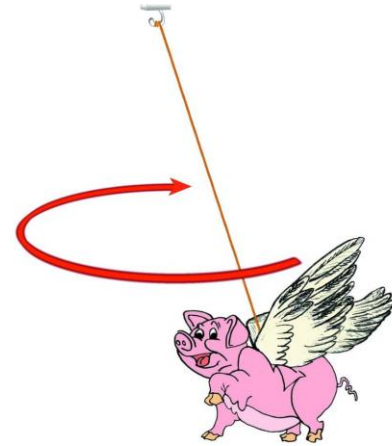
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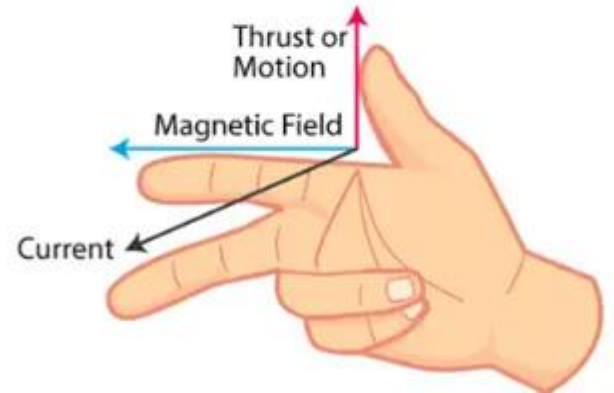
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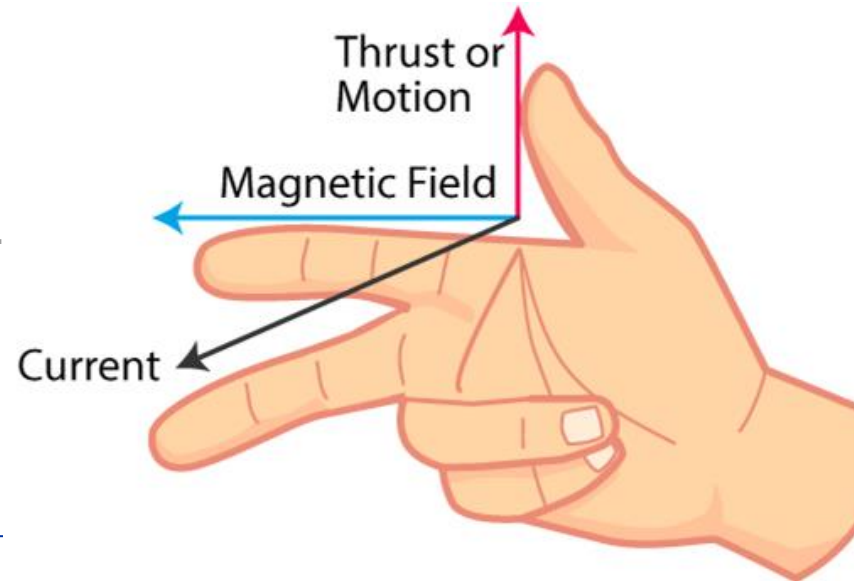
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What is Fleming's Hand Rule?



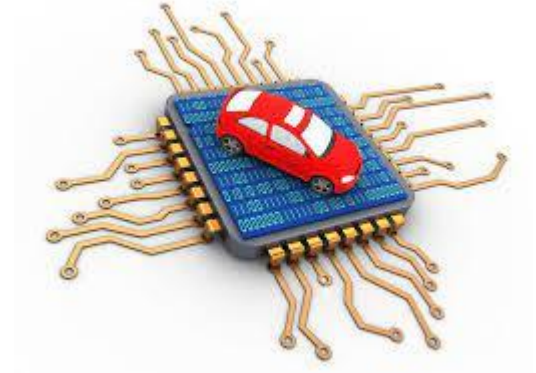
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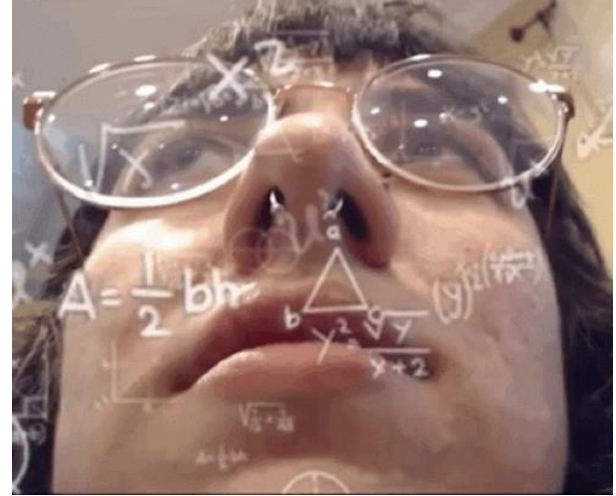
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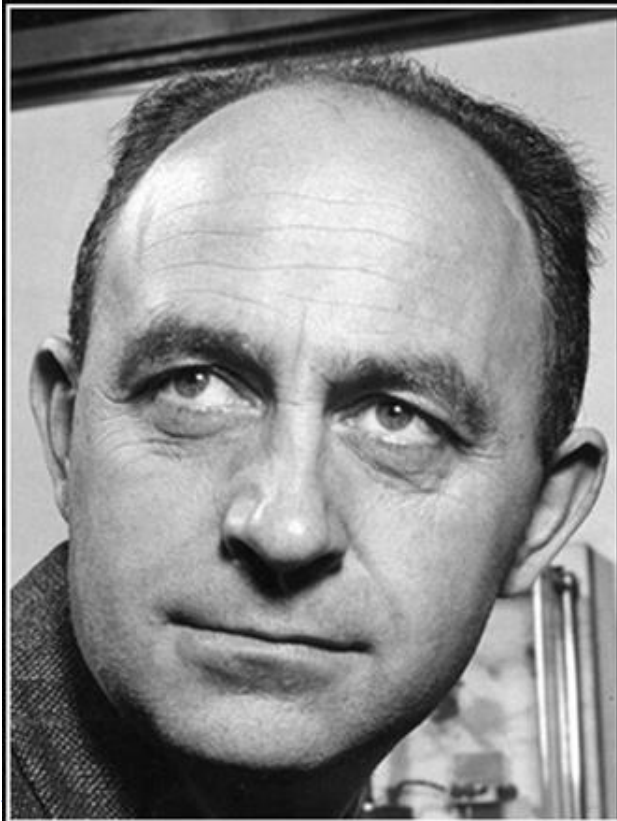
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Curriculum & Classroom Connections



Before I came here I was confused about this subject. Having listened to your lecture I am still confused. But on a higher level.

— *Enrico Fermi* —

AZ QUOTES

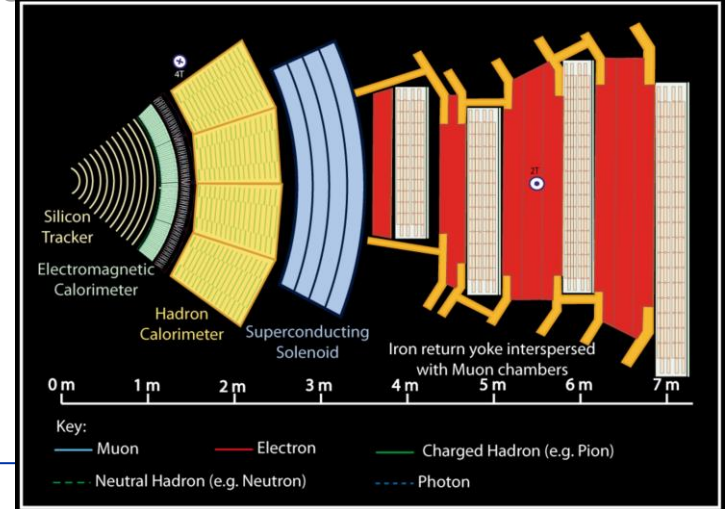
Key Ideas

- We need different ways of detecting the things we cannot see with our senses.
- There are different types of particles, therefore we need different types of detectors.
- Detecting is measuring and we can measure different properties.
- For a meaningful instruction: make it tangible!
- For a meaningful instruction: make it fun!



Key Ideas

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Potential Students' Conceptions & Challenges

particle

field

velocity

Charge

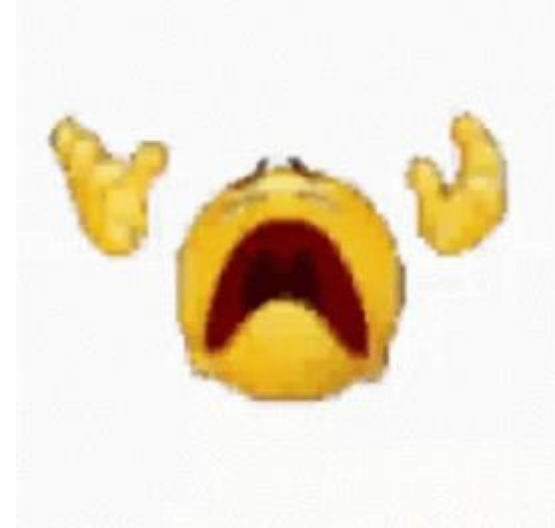
Interaction of charged particles with the electromagnetic field

mass

momentum

energy

$E=mc^2$



How is an interaction transformed into a signal?

Equations: <What does an equation mean and how to rearrange the equation?>

They know the negatives about radioactivity, but not the positives

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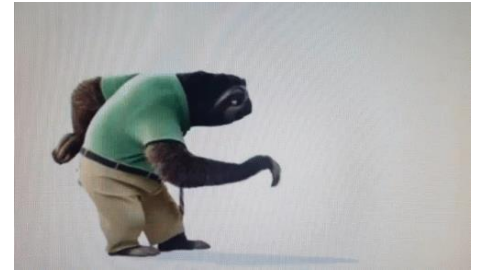
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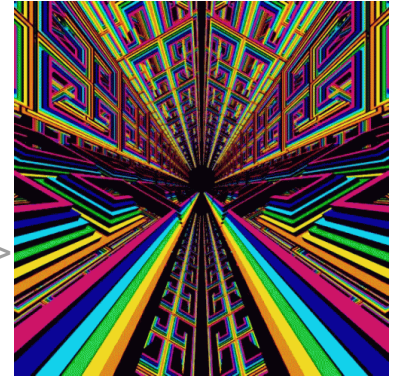
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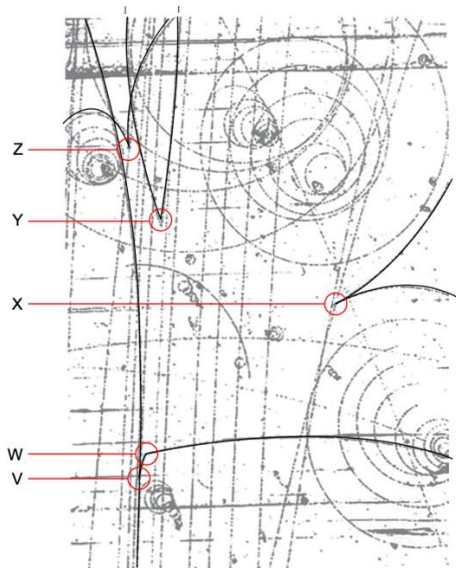


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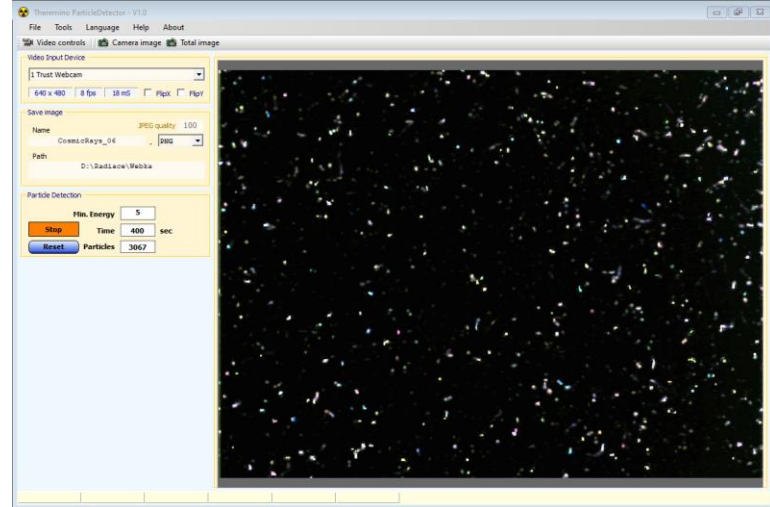
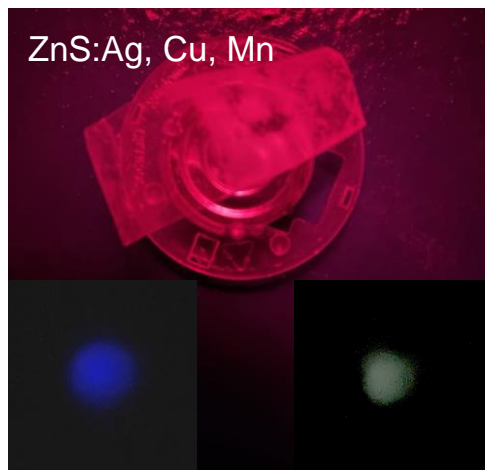
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Useful Material & Resources

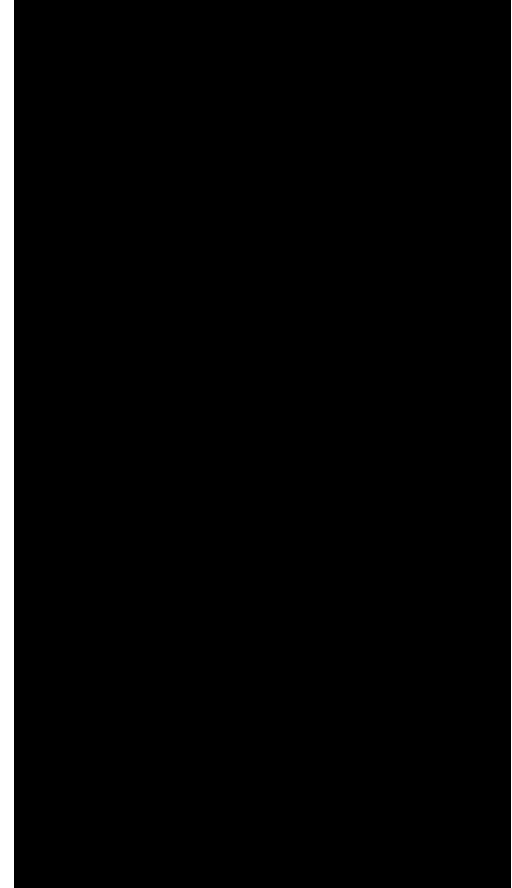


Beyond the Atom: Remodelling Particle Physics
(Perimeter Institute for Theoretical Physics)



Best Practice Example

Cloud chamber.



HST2024 Study Group 9

Adam (Czech Republic), Claudia (Guatemala/Vietnam), Jenny (UK), kalmer (Estonia), Lucas (Brazil), Virginia (Switzerland)

One way in which our thinking has changed...

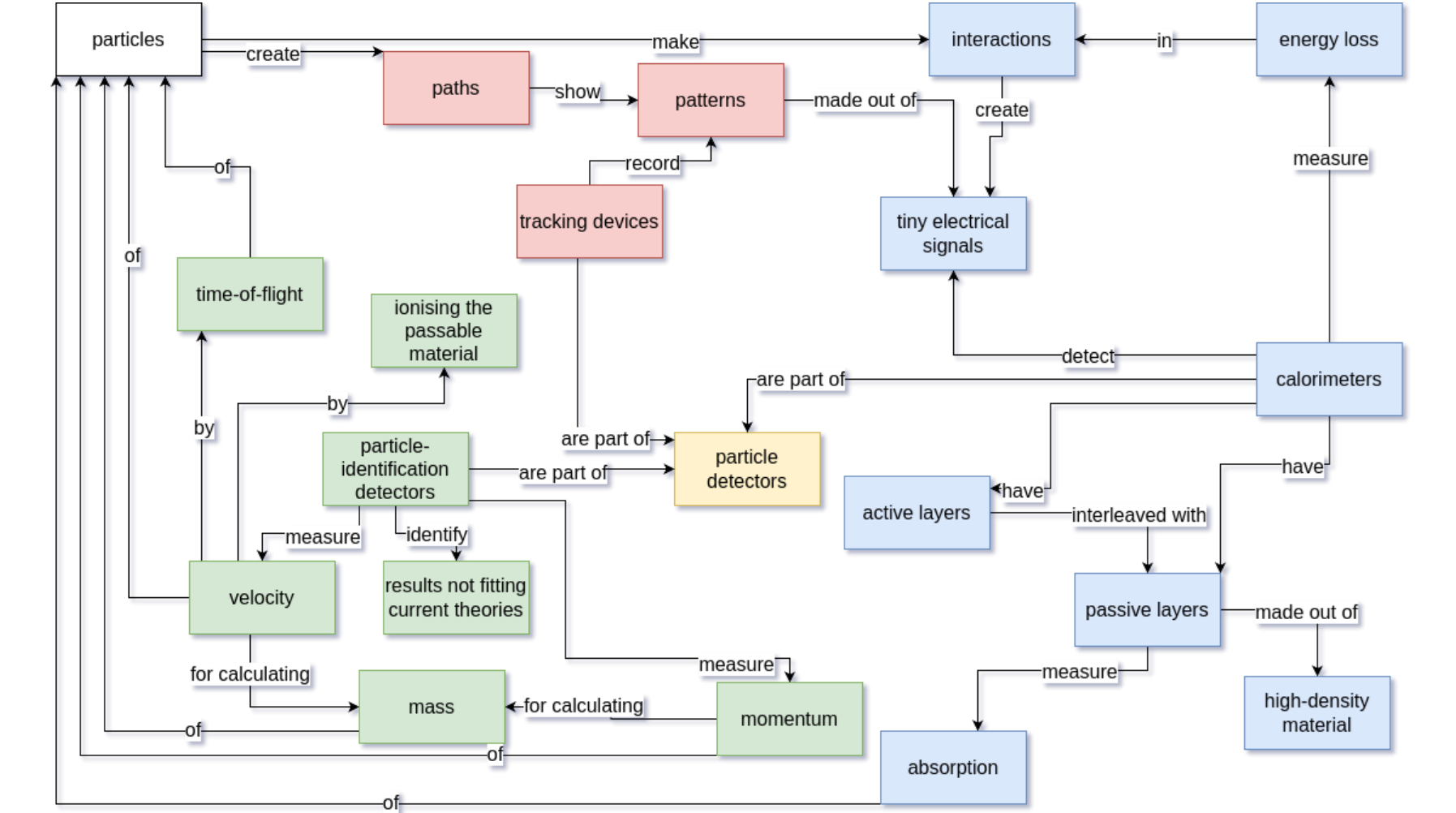
- **CERN is a place where many career pathways meet to make big science happen**
- **International collaboration**

Free flow, highlights, snapshots...

- **CERN should change its name to CIRT Centre International Recherche “du Tout”**
 - **This programme should change its name to LEPTONS Loaded Educational Programme for Teachers Of all Nations**
-

Annihilation (not to scale)





Annihilation (not to scale)

