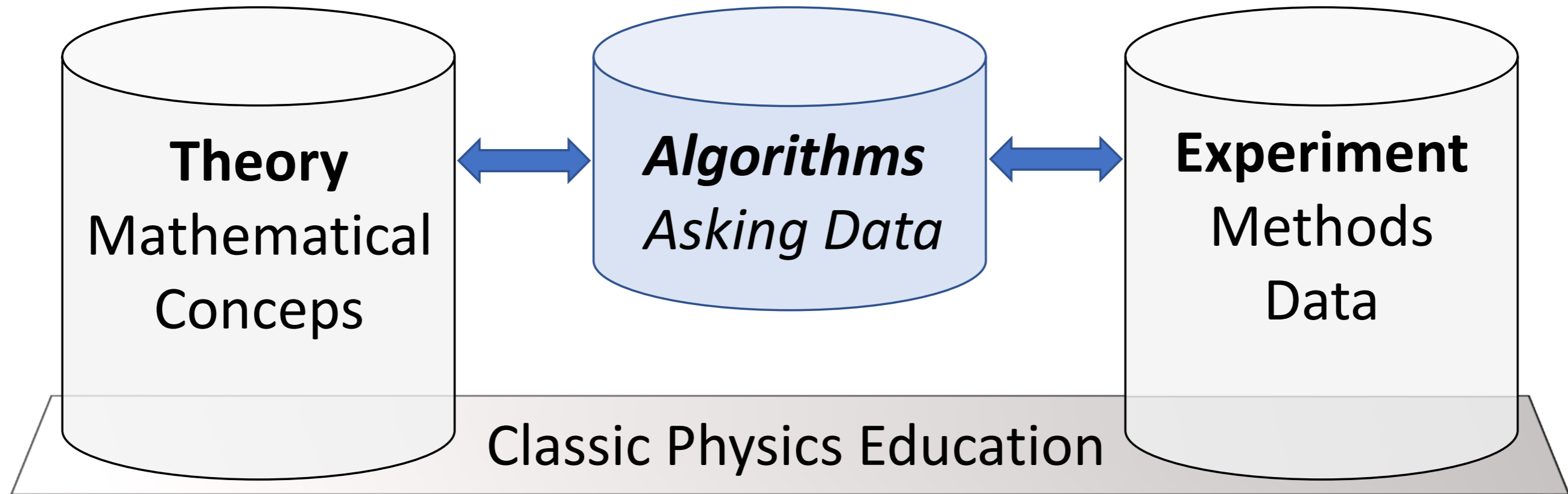
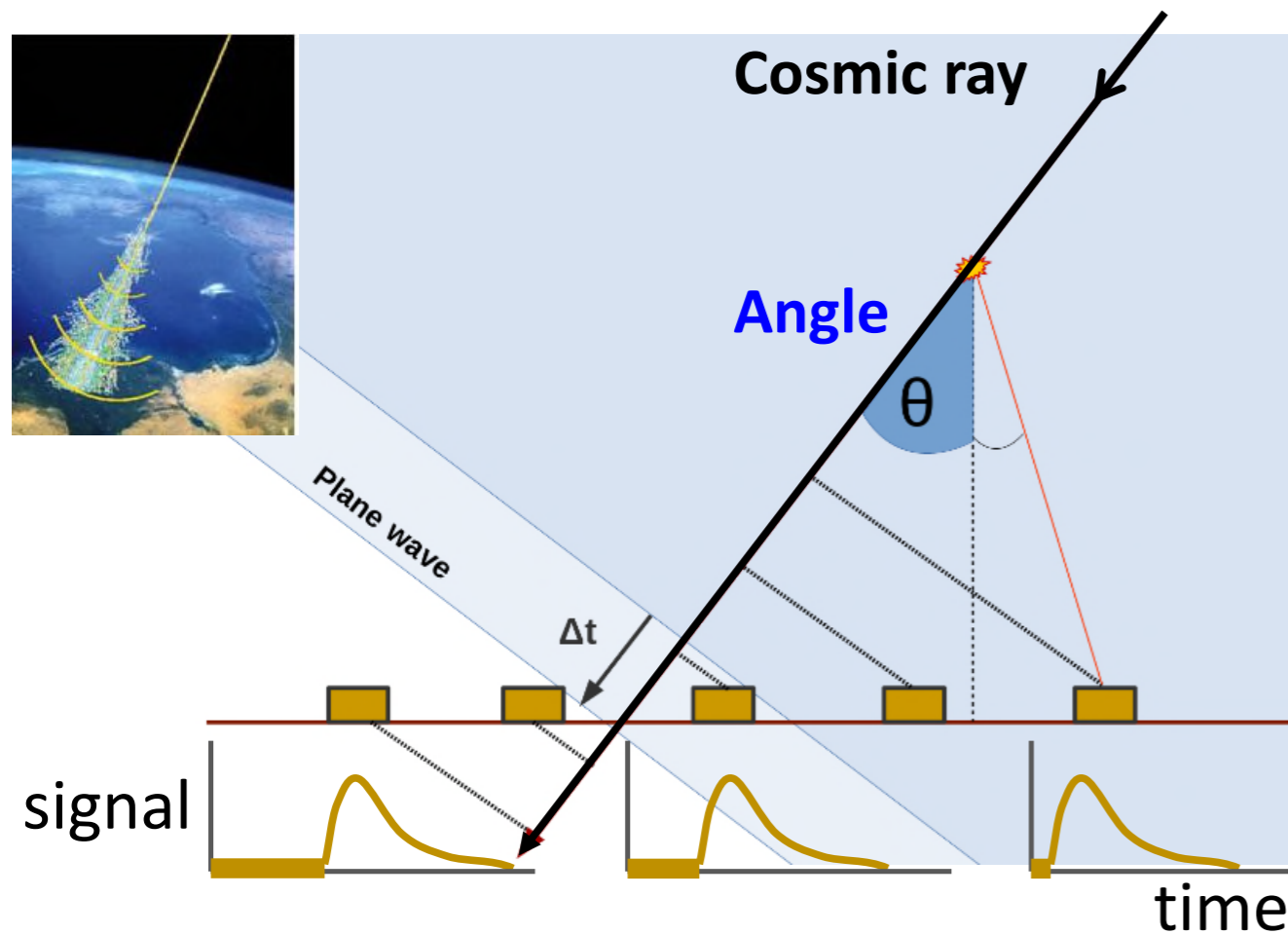


Deep Learning in Research on Universe & Matter

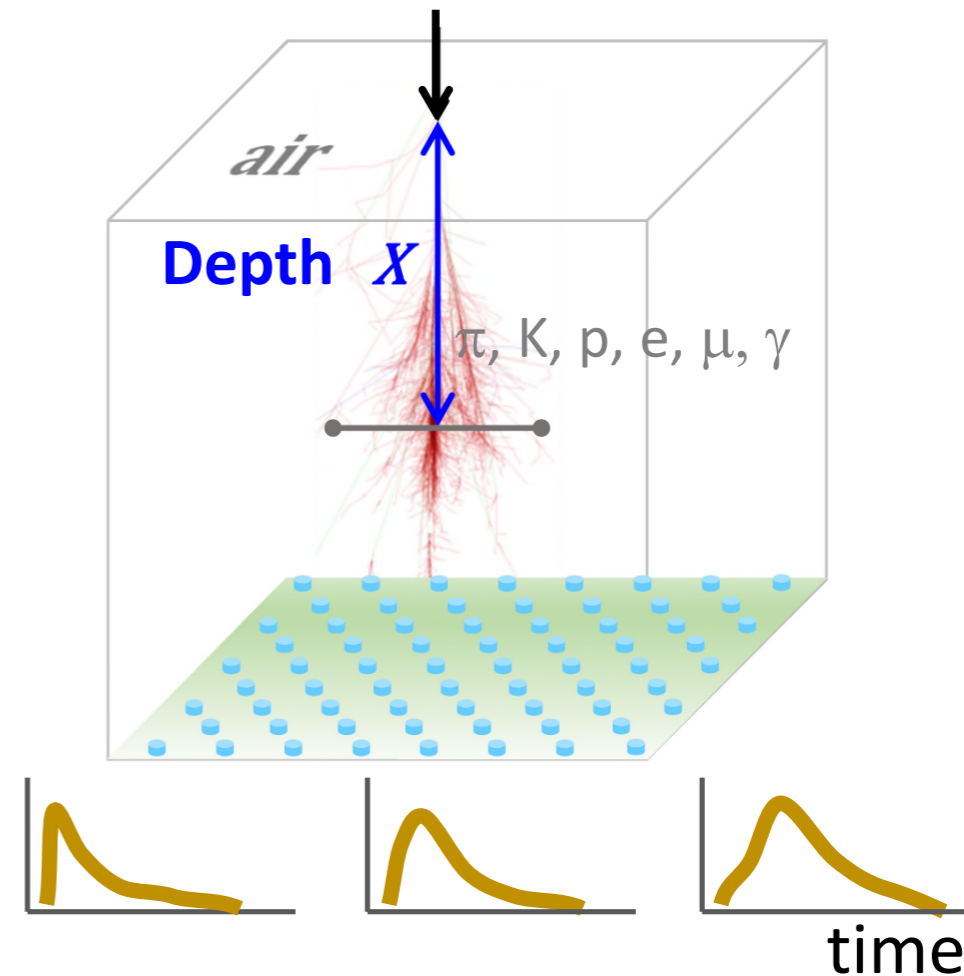


Martin Erdmann, RWTH Aachen University, 27-Feb-2023

When to apply Deep Learning?



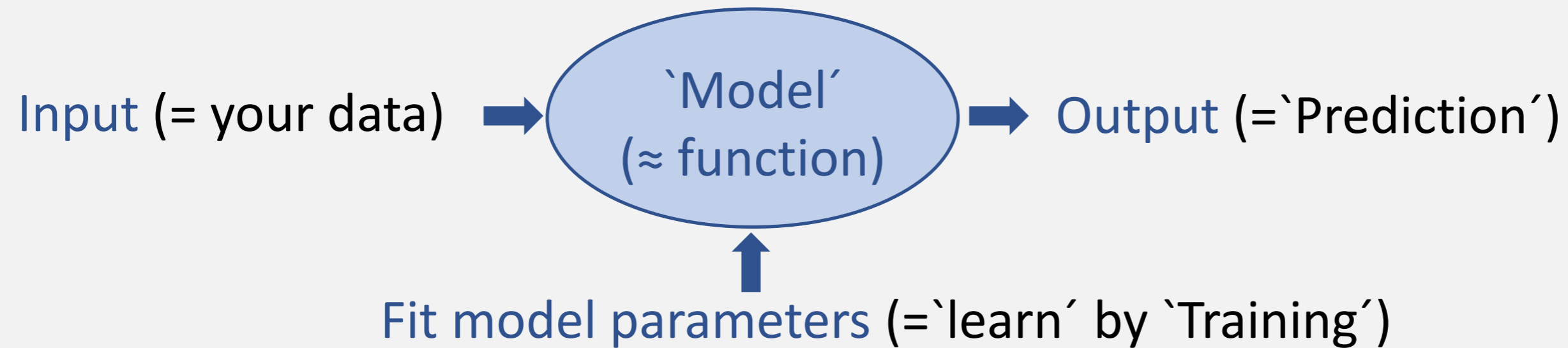
Angle θ from signal start time:
Human-written algorithm is ok



Depth X from signal shapes:
Machine learning algorithm needed

- Many variables on input ('features')
- Multiple conditions (impossible: if-then-else)

Principles of Machine Learning



This course: ***you will know how to***

- Ask question to model
- Program model
- Train model
- Evaluate model
- Control model
- Determine model uncertainties

Please:

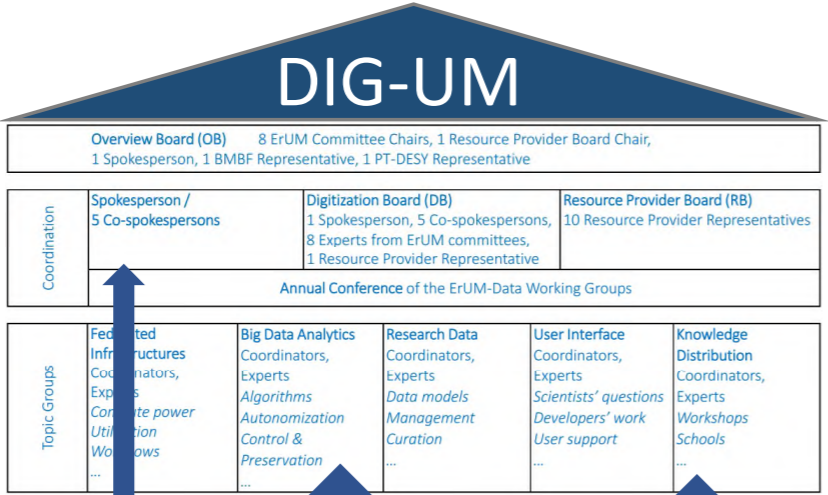
- Connect with your fellow participants for later exchanges!
- At your home institutes tell others how deep learning works.
- Your outreach: deep learning is challenging but *no magic* (ChatGPT).

Organizational Viewpoint: Research on Universe & Matter `ErUM`

Community Self-Organization

- KAT
- KET
- KfB
- KFS
- KFSI
- KFN
- KHuK
- RDS

Digital Transformation



Spokesperson
M.E.

Knowledge
Distribution

Big Data Analytics


You are most welcome to join

BMBF Funding

ErUM-Pro

Project funding at
LHC experiments
Synchrotron sources
Neutron sources
Observatories
...

ErUM-Data

Project funding for
Software & Algorithms
...
 ErUM-Data-Hub
'Digital Knowledge Agent'
A.W., B.F., P.F.

Jobs 4 you !

<https://lists.rwth-aachen.de/postorius/lists/erum-data-big-data-analytics.lists.rwth-aachen.de>