TSU HEPI Computer Server for Nuclear and Particle Physics

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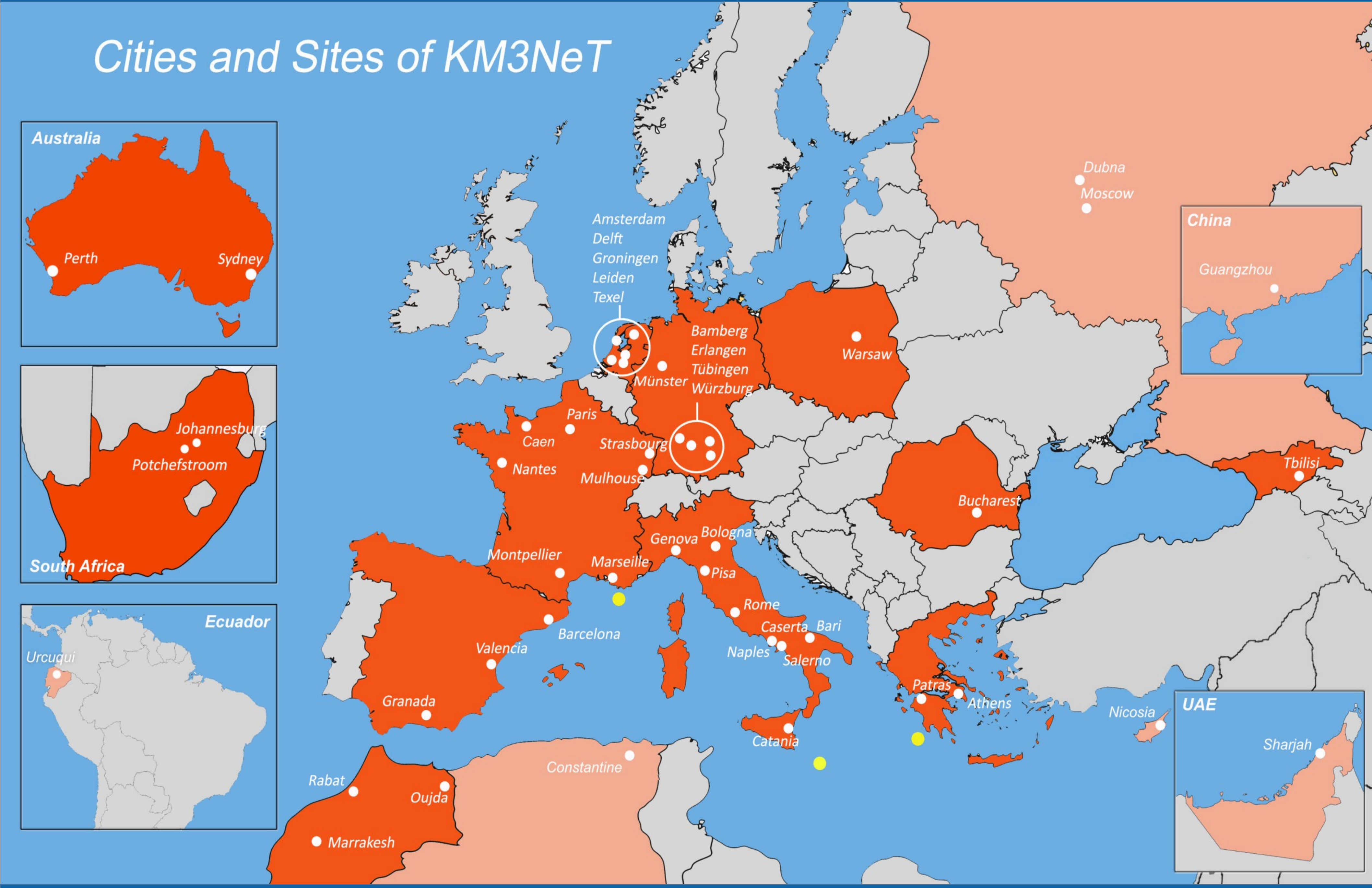
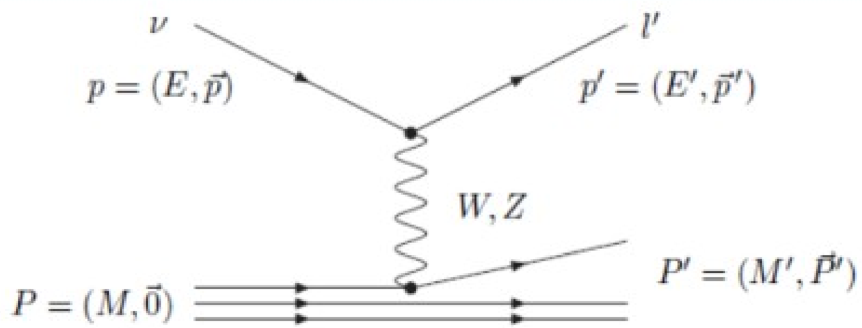
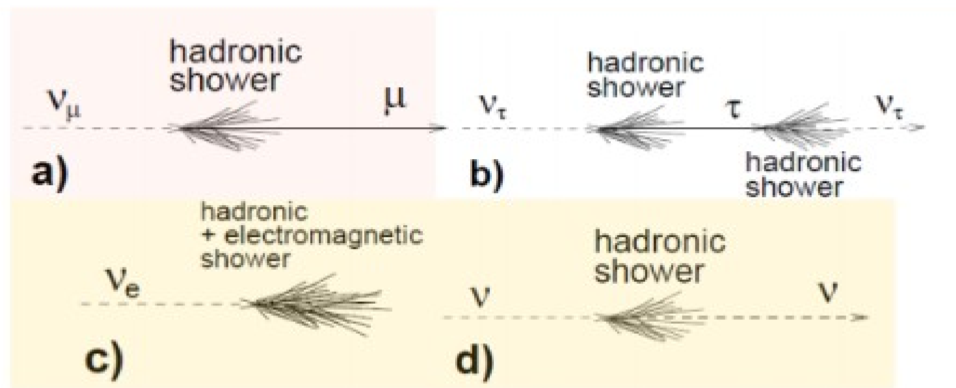
KM3NeT Collaboration

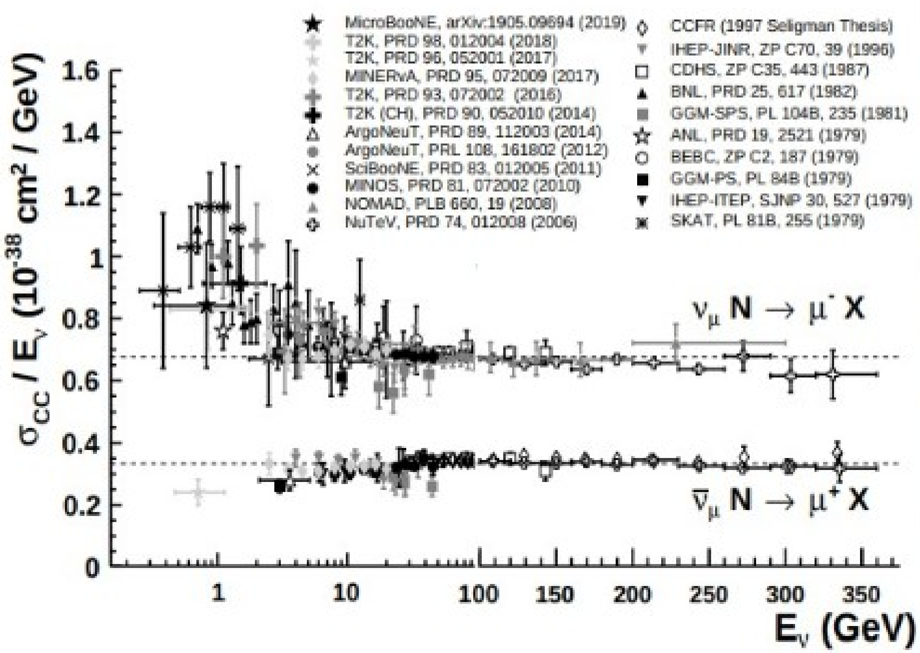


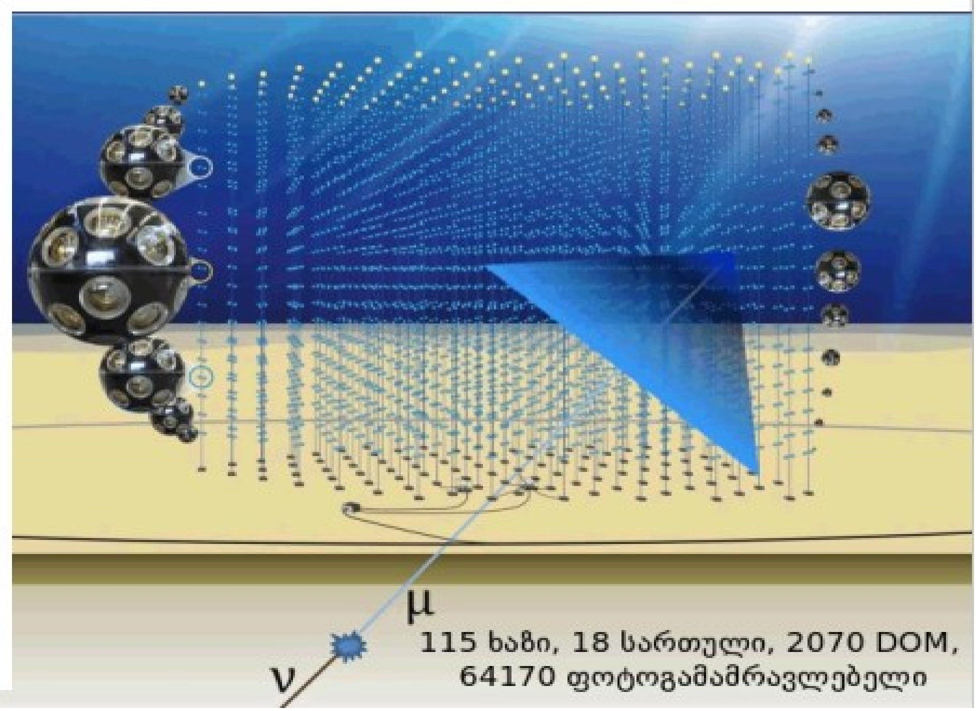
KM3NeT Project

Neutrino physics and astrophysics in the Mediterranean Sea









TSU HEPI Computer Server Specifications

Main Hardware specifications
Dell PowerEdge T40

- Intel Xeon E-186G
- 3.8GHz (upto 4.7GHz) 6 core, 12 Threads
- 12MB cache memory
- 32GB RAM
- 10 TB hard disk

CentOS 7

The Community ENTerprise Operating System

Address: t2.km3net.tsu.ge

Number of users > 30
Used storage > 4TB

Available software at TSU server

KM3NeT Software

Software	Programming Language	Main Functions
gSeaGen	C++	Simulations of neutrinos
MUPAGE	C++	Simulations of atm. muons
JPP	C++	Simulations of light and detector data analysis...
AANET	Python	data analysis
km3py	Python	Accessing and analysis of the data

Simulations of particle interactions with matter

Simulations of particle decays

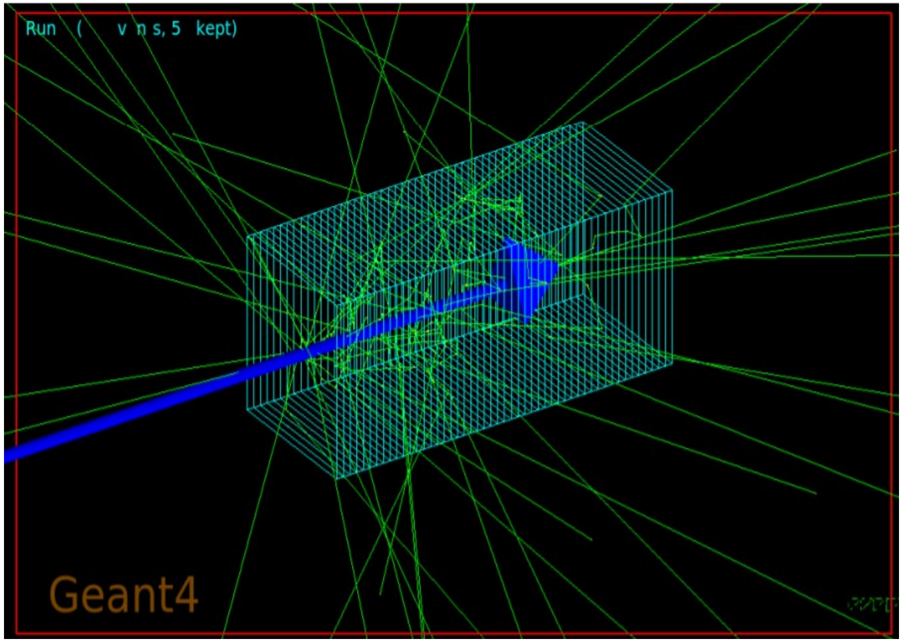
Web based python environment

Simulations of high-energy particle collisions

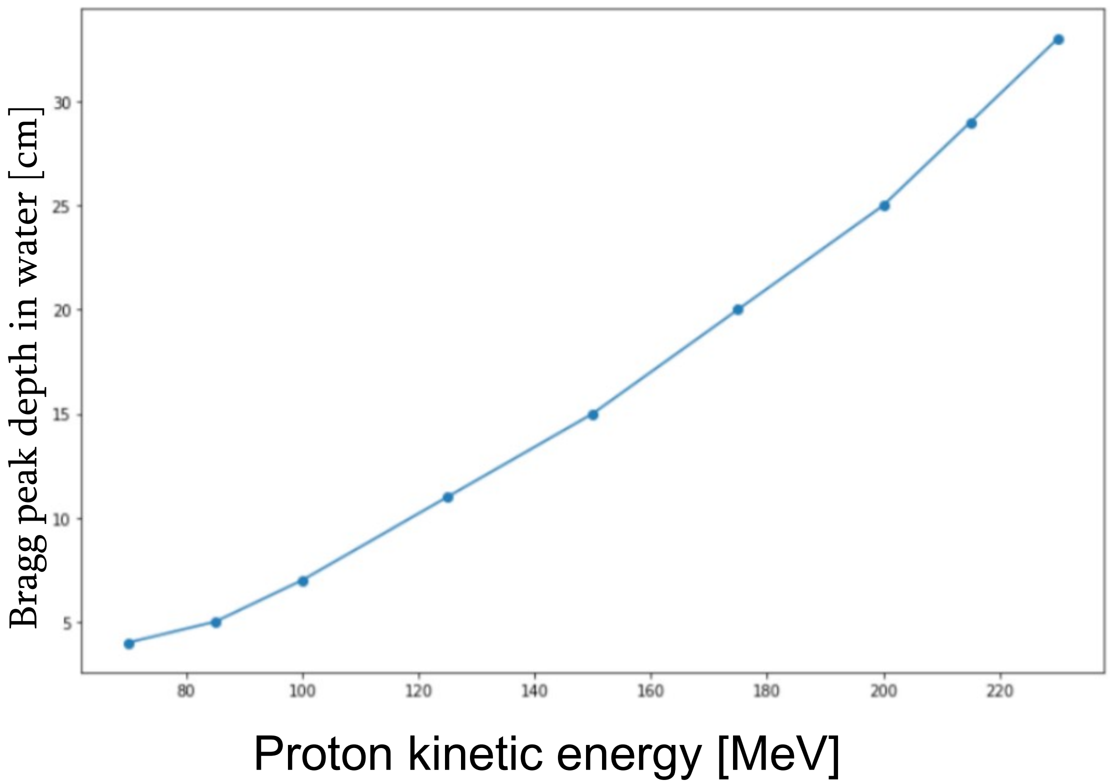
High level data analysis

Examples: GEANT4

GEANT4
A SIMULATION TOOLKIT

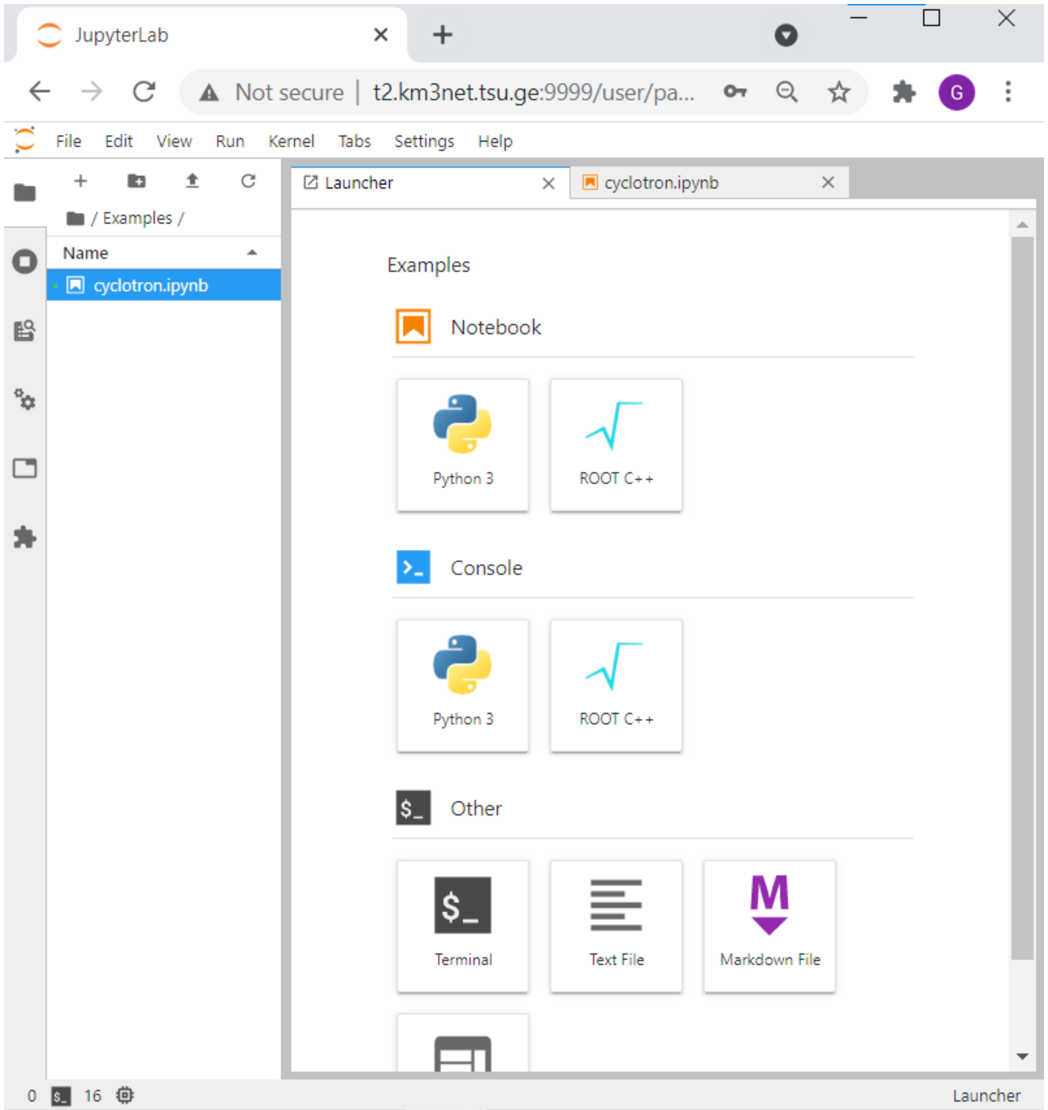


Proton beam interacting with matter



Example from master thesis of Giorgi Murvanidze

Examples: JupyterHub

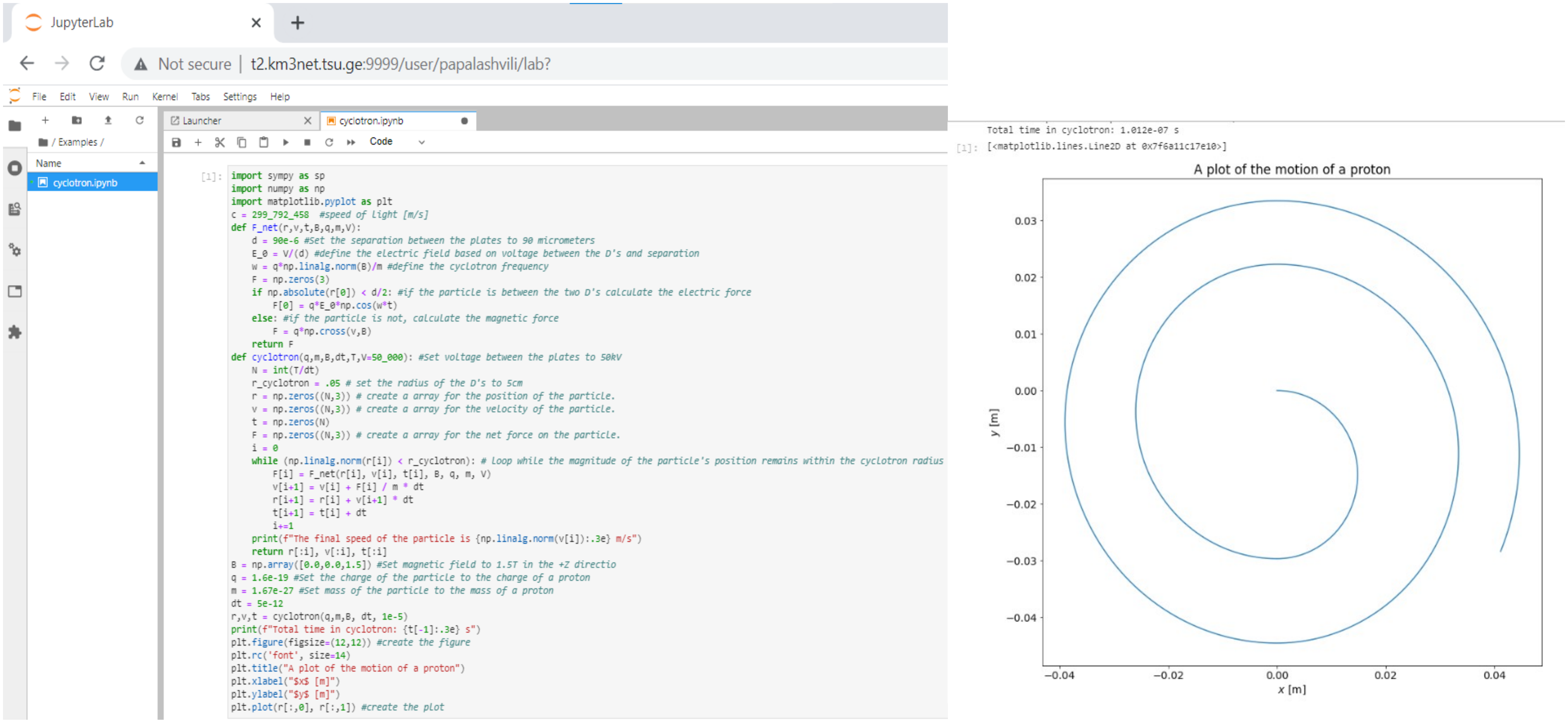


Screenshot from TSU HEPI web based JupyterHub Environment

https://jupyter.org/hub

Address: http://t2.km3net.tsu.ge:9999/

Examples: JupyterHub Cyclotron Simulation



Simulating a relativistic cyclotron
Computational Essay - Simulating a cyclotron
A computational essay by Vebjørn Hallberg Bakkestuen

Summary and Outlook

- HEPI TSU Server was created mainly for KM3NeT related projects
- KM3NeT software and other widely used software are available at HEPI TSU
- The server runs continuously and used by more than 30 users currently
- Students are welcome to use our resources
- Involving more students to do high level computing projects for their research
- Implementing new software and methods