



*Astronomy ESFRI & Research Infrastructure Cluster*  
ASTERICS - 653477



# Citizen Science in the classroom: problems and requirements

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# Citizen Science

- public engagement in scientific research
- more data collection and data analysis than the scientists could do alone
- partnership between inexperienced citizens and scientists
- citizens are volunteers

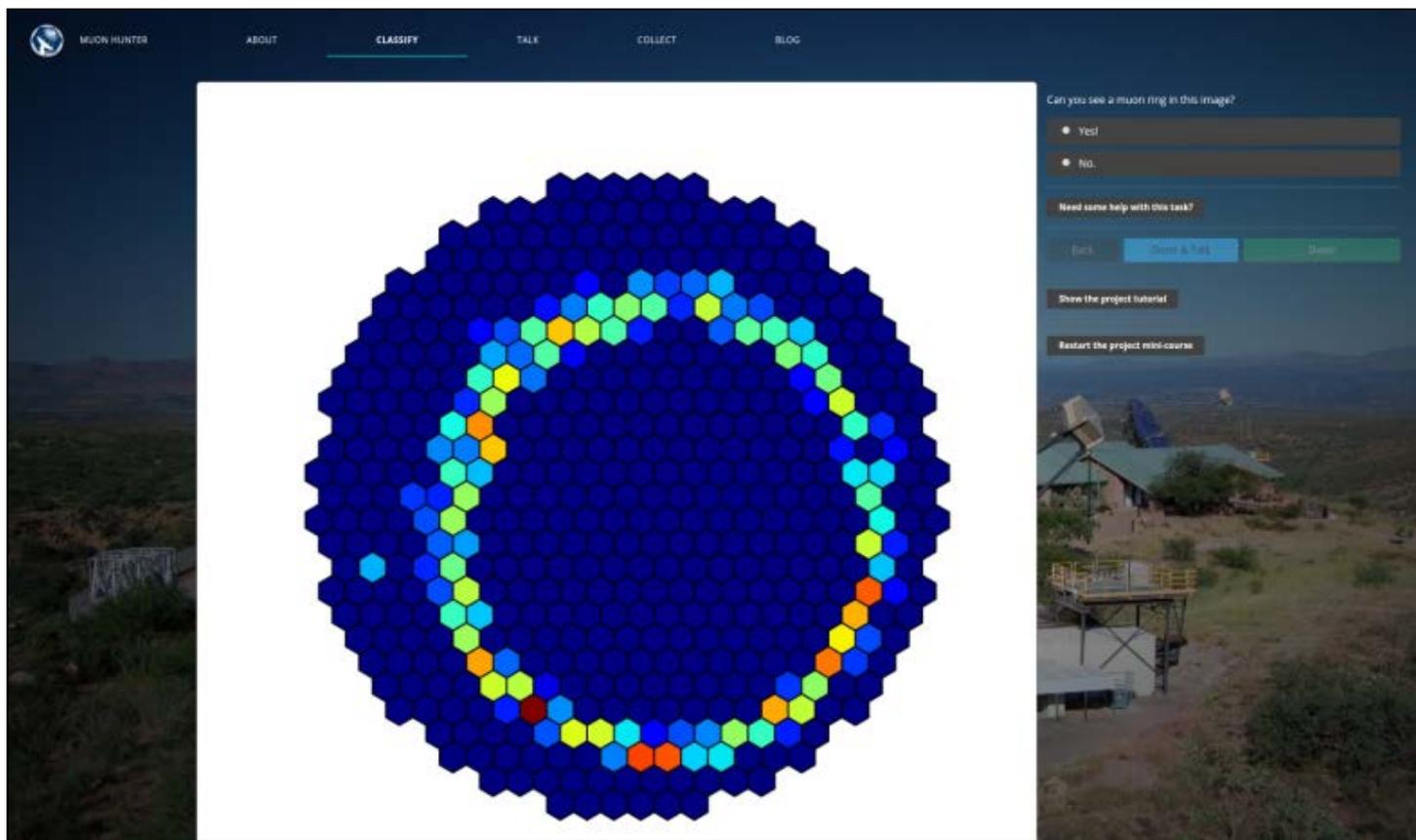
# Citizen Science @school

- alternative to traditional science education
- may be beneficial for both parties involved
- creates an environment in the classroom that encourages students participation in science
- students learn analyzing data and interpreting their own observations

# Citizen Science @school

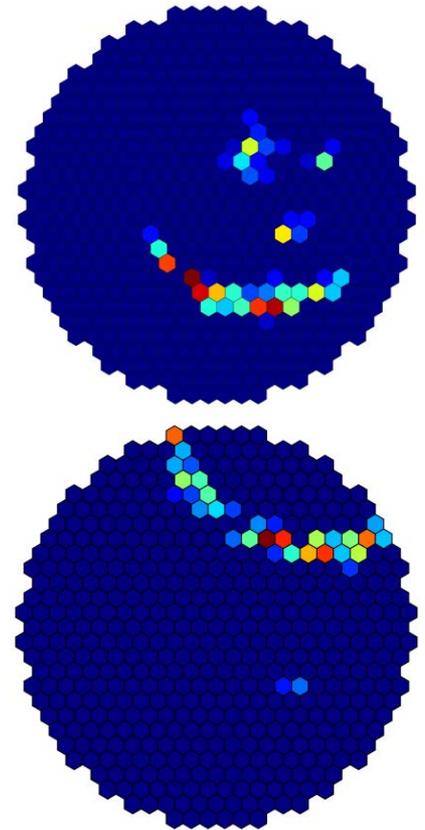
- compromise between the research value and the educational value of the project
- the quality of the experiment and its data should not be compromised, but the learning objectives for the students must be the priority
- avoid getting pupils to work with anything too specialized for them: dedicated surveys

# Muon hunter CS experiment



# Muon hunter CS experiment

- muons leave a distinctive ring-like shape making them obvious to the human eye
- but incomplete or truncated rings can appear very gamma-ray-like to automatic analysis algorithms
- help is needed to identify images that contain muon rings so computers can learn to better identify such images



# CS @school: the Galilei experience

- 4 students of the last year (17-18 yr old)
- one afternoon (4hr) during the whole school yr
- first part of the program:
  - selected lectures on basic astronomy
  - familiarize with VO tools and measures in astronomy
- second part of the program:
  - Muon hunting

# CS @school: problems

- schools need long lasting projects
- teacher's lack of experience in science
- experiment theme too difficult
- English is not enough

# CS @school: how-to

- best way to start a CS project is to find a scientist interested in working with schools
- develop the CS experiment together with some teachers and EPO experts
- provide support and training material for users (demos, videos, lessons, ...)

# CS @school: further requirements

- avoid starting from scratch at each new school yr
- find motivated teachers with the appropriate scientific background
- long enough commitment to fit school curricula and allow development of a community
- translations! @MuonHunter2

# Conclusions

successful citizen science projects in the classroom need:

- collaboration between scientists, teachers, EPO
- teacher training
- compromise between scientific goal and comprehensibility of the CS experiment
- long term commitment