EXPERIENCES FROM TEACHING PHYSICS WITH IPYTHON NOTEBOOK

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INTEGRATION

› Denmark
› Winner of European songcontest
› Birthplace of Søren Kierkegaard
TL;DR

IPython is an awesome tool for teaching...
TL;DR

› IPython is an awesome tool for teaching

› and possibly much more
TEACHING PHYSICS

› Physics is considered hard by students
› “What is the use?”
TEACHING PHYSICS

› ElectroMagnetics is abstract
› What is a field?
› How does semiconductors work?
IPYTHON NOTEBOOK

› Great tool
› Feels lightweight
IPYTHON NOTEBOOKS

› MatLab in a browser
› That is a MatLab that starts counting at zero!
PHYSICS EXTENSION

› Adds Physical Quantities to IPython
› Adds physical constants to Ipython
› Enables check if Units match
› Started by : %load_ext physics
HOW TO MAKE PHYSICS INTERESTING?

› Not a solved problem 😞
› Examples
› Examples
› Examples
EXPERIMENT

› Introduce IPython as an online calculator
› Show that it can use units
› Extend by adding small functions

› Introduce plotting
RESULTS

› More attention in class
› More questions to the subject at hand
› More interactive learning
RESULTS

› More attention in class
› More questions to the subject at hand
› More interactive learning

› Sideeffect: Students learned basic Python
FEEDBACK FROM STUDENTS

• Weird at start
• Cool
• Different to MathCad
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GOOD THINGS

› Interactive experience (including typos etc)
› Units
› Inline plots
OK THINGS

Python
ANNOYING THINGS

› Remember to save
› Towtruck
BAD THINGS

› No (little) Security
CONCLUSION

› IPython is an excellent tool for teaching

› ... but only a single tool in a range of teaching tools
FUTURE (WISHLIST)

› Quizzes
› A vehicle for selfstudy
› Group learning
› Examinations
WISHLIST 2

› Integration with version control
› Grow into an IDE (maybe it already is?)
IDEA

Presentation framework
THANK YOU!

〉Questions?
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