

Computation in Particle Physics

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What kind of computing
{ do we }
{ should we }
include in the Vassar curriculum?

Who?

What?

Where?

When?

Why?

Why teach computation to physics students?

- Computational methods are used in all branches of physics research, for both experimentation and theoretical calculations. [More later...]
- Computation can enable useful ways to teach particular topics. (eg "Computer" problems, graphics)
- Students with proper computational background have a better chance at summer research opportunities (eg CERN REU)
- Preparation for more advanced study (grad school)
- General knowledge

Computing is a part of a complete, well rounded education

... in physics

... in the sciences

... in general!

Why teach computation? (II)

It is becoming as necessary as Calculus (or Algebra in Maria's day)

- I. In physics classes we want students to know how to compute derivatives and integrals, and what they mean.
- II In math class students learn not just how to calculate, but why it works, when it doesn't, and the reasons.

Physics students need I, but profit from having been through II.

Without some background and fundamental reasons, students just treat calculus as a black box and turn the crank without knowing why it works.

The same is true for numerical methods.

