Using APL in Physics

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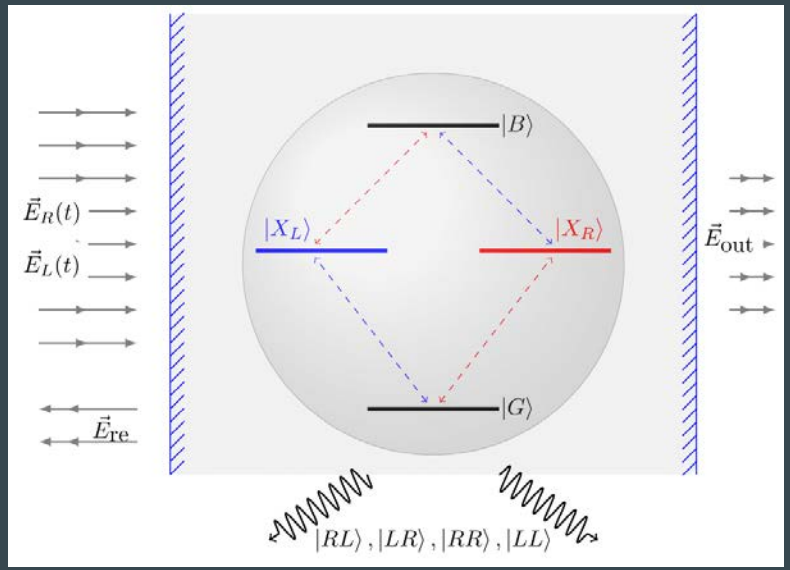
Polarization-entangled photon generation ...



"Polarization-entangled photon generation in a semiconductor quantum dot coupled to a cavity interacting with external fields." - Quantum Information Processing (13) 12.

WHY use APL?

WHAT we did.

WHAT we learned.

WHY?

Why try something new?

Why use APL?

WHY change?

Why change?

Physicists + programming = disaster

Why change?

BUT

Physics needs lots of programming

Why change?

Better prototyping.

WHY pick APL?

MATRICES

Why APL

Terse expressions

WHAT we did.

What we did

Math model → matrix equations

→ APL numerical solution

What we did

Equations

Operators → APL

Matrices

What we did

Interactively trying solutions

What we did

Automating solutions

WHAT we learned.

What we learned.

APL is great

What we learned.

APL is suitable for

fast physics prototyping.

What we learned.

APL is suitable for fast physics prototyping:

IDE

What we learned.

APL is suitable for fast physics prototyping: terse expressions

What we learned.

Still a lot to learn.

WHAT we learned: downsides?

What we learned.

Can’t convince people to use it.

What we learned.

Efficiency might be a concern.