A sample presentation

With ramblings from a madman

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APS March Meeting
Denver Colorado
12 février 2026

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Title

The quick brown fox jumps over the lazy dog [1].

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$$\boxed{i\hbar\partial_t \left|\Psi\right\rangle = \hat{\mathrm{H}} \left|\Psi\right\rangle} \tag{1}$$

What

What

- One.

What

- One.
- Two.

What

- One.
- Two.
- Three.

The state of the world

Théorème 1.1 : Birb

Birbs exist.

Colorbox test

A very important result.

A test of what the box environment looks like

This is the fundamental theorem of calculus :

$$\int_a^b f(t)\,\mathrm{d}t = F(b) - F(a) \tag{2}$$

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Notice :

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- another thing to say ;
- consider $\mathbf{F} = m\ddot{\mathbf{x}}$.

A simple derivation

Extremization of the action entails :

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\begin{aligned}
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&= \int_{t_i}^{t_f} \mathrm{d}t \left[\frac{\delta \mathcal{L}}{\delta q} \delta q + \frac{\delta \mathcal{L}}{\delta \dot{q}} \delta \dot{q} \right]
\end{aligned}
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&= \int_{t_i}^{t_f} \mathrm{d}t \left[\frac{\delta\mathcal{L}}{\delta q}\delta q + \frac{\delta\mathcal{L}}{\delta\dot{q}}\delta\dot{q}\right] \\
&= \int_{t_i}^{t_f} \mathrm{d}t \left[\frac{\delta\mathcal{L}}{\delta q} - \frac{\mathrm{d}}{\mathrm{d}t}\frac{\delta\mathcal{L}}{\delta\dot{q}}\right]\delta q + \underbrace{\int_{t_i}^{t_f} \mathrm{d}t \frac{\mathrm{d}}{\mathrm{d}t}\left(\frac{\delta\mathcal{L}}{\delta\dot{q}}\delta q\right)}_{\text{vanishes (B.C.s)}}
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&= \int_{t_i}^{t_f} \mathrm{d}t \left[\frac{\delta \mathcal{L}}{\delta q} - \frac{\mathrm{d}}{\mathrm{d}t} \frac{\delta \mathcal{L}}{\delta \dot{q}} \right] \delta q + \underbrace{\int_{t_i}^{t_f} \mathrm{d}t \frac{\mathrm{d}}{\mathrm{d}t} \left(\frac{\delta \mathcal{L}}{\delta \dot{q}} \delta q \right)}_{\text{vanishes (B.C.s)}} \\
&\Rightarrow \boxed{\frac{\delta \mathcal{L}}{\delta q} - \frac{\mathrm{d}}{\mathrm{d}t} \frac{\delta \mathcal{L}}{\delta \dot{q}} = 0}
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\tag{3}
$$

The converse is equally true, hence :

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Extremization of the action entails :

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$$= \int_{t_i}^{t_f} \mathrm{d}t \left[\frac{\delta\mathcal{L}}{\delta q}\delta q + \frac{\delta\mathcal{L}}{\delta\dot{q}}\delta\dot{q} \right]$$
$$= \int_{t_i}^{t_f} \mathrm{d}t \left[\frac{\delta\mathcal{L}}{\delta q} - \frac{\mathrm{d}}{\mathrm{d}t}\frac{\delta\mathcal{L}}{\delta\dot{q}} \right] \delta q + \underbrace{\int_{t_i}^{t_f} \mathrm{d}t \frac{\mathrm{d}}{\mathrm{d}t}\left(\frac{\delta\mathcal{L}}{\delta\dot{q}}\delta q \right)}_{\text{vanishes (B.C.s)}}$$
$$\Rightarrow \boxed{\frac{\delta\mathcal{L}}{\delta q} - \frac{\mathrm{d}}{\mathrm{d}t}\frac{\delta\mathcal{L}}{\delta\dot{q}} = 0} \tag{3}$$

The converse is equally true, hence :

$$\boxed{\delta\mathcal{S} = 0 \ \& \ \text{B.C.s} \Longleftrightarrow \frac{\delta\mathcal{L}}{\delta q} - \frac{\mathrm{d}}{\mathrm{d}t}\frac{\delta\mathcal{L}}{\delta\dot{q}} = 0} \tag{4}$$

Testing columns

This is a Woodcock. Its features are :

Testing columns

This is a Woodcock. Its features are :

- A beak

Testing columns

This is a Woodcock. Its features are :

- A beak
- Wings

Testing columns

This is a Woodcock. Its features are :

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- Wings
- A brain (barely)

Testing columns

This is a Woodcock. Its features are :

- A beak
- Wings
- A brain (barely)
- Camouflage

Questions (2 minutes)

Thank You!

Bibliography I

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