A rational mechanics course where everything is made with Python code

Bettachini, Víctor A.; Real, Mariano A.; Palazzo, Edgardo

New Media Pedagogy 23

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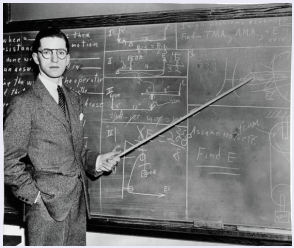

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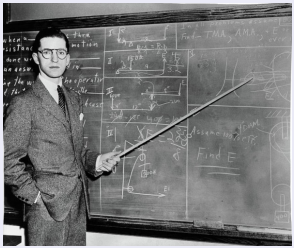

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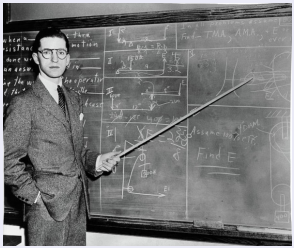

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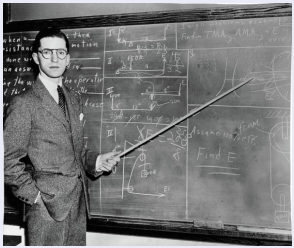

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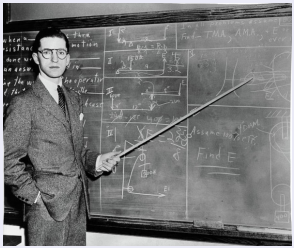

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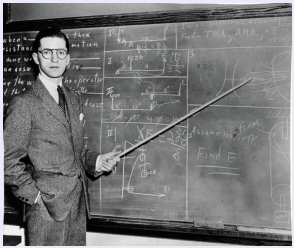

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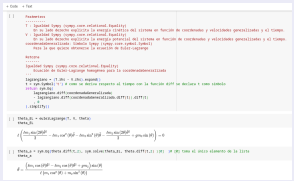

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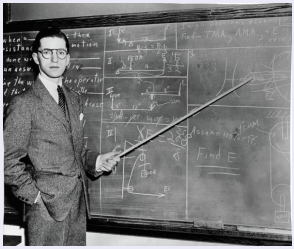

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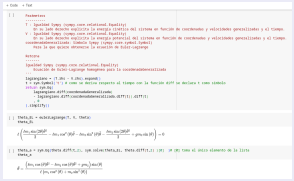

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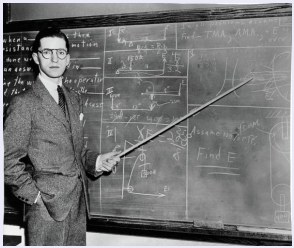

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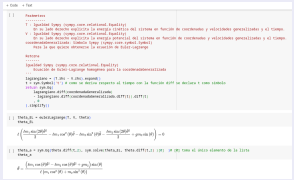

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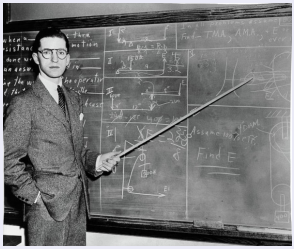

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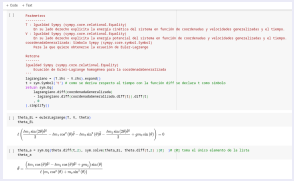

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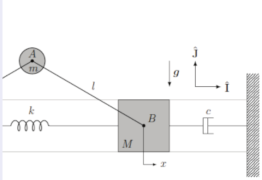

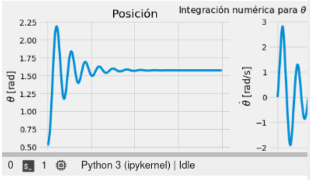

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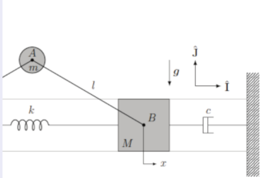

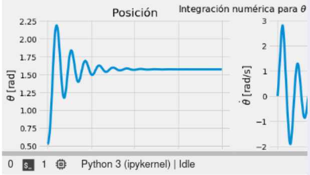

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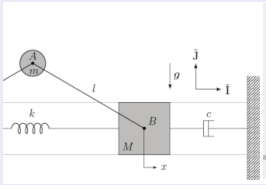

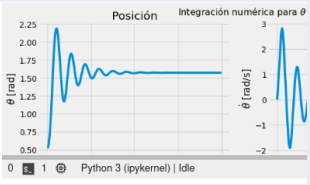

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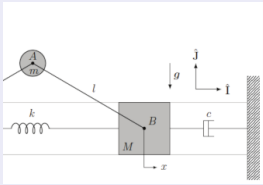

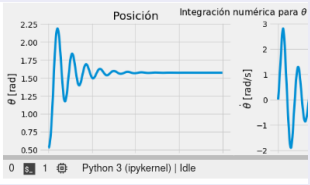

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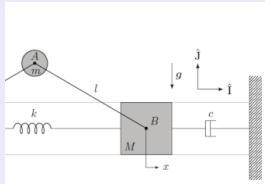

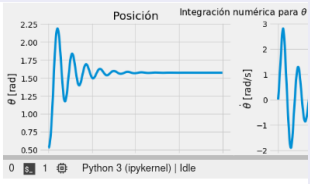

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On-line programmable notebook: text + equations + code

Synchronical and asynchronical work on the code

New theory alongisde its worked examples in programmable notebooks

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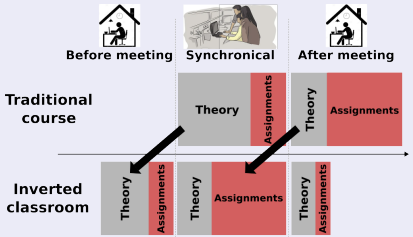
Inverted classroom



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During	Consultations	Complete them
After	Additional consultations	TA's corrections

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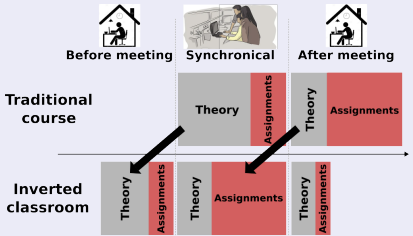

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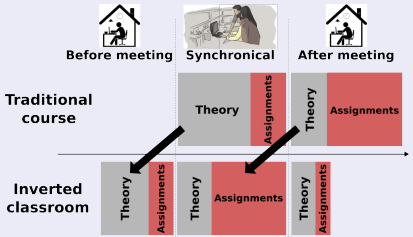

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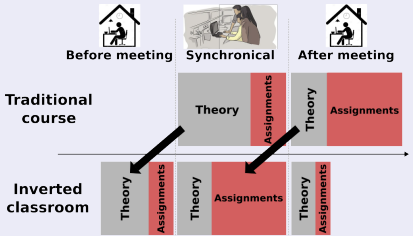

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Before	Read and apply	Start them
During	Consultations	Complete them
After	Additional consultations	TA's corrections

Asynchronical corrections and remote assistance

Student's work can be commented and edited in Google Colaboratory

07 No conservativas | ej4

Archivo Editar Ver Insertar Entorno de ejecución Herramientas Ayuda Se editó por última vez: 3 de junio

Comentar Compartir

+ Código + Texto

Conectar Editando

```
[ ] # Energía potencial
    m1_V = - (m1* g* (- N.y)).dot(m1_r)
    # pot_k1 = unMedio* ( -k1* ((l10 + x1)* (sym.cos(theta) - sym.sin(theta)) )**2 ) # mal
    pot_k1 = unMedio* k1* (l10 + x1)**2 # Lo escribí yo
    # pot_k2 = unMedio* -k2* (l20 + x)**2
    pot_k2 = unMedio* k2* (l20 + x)**2
    V = sym.Eq(sym.Symbol('V'), m1_V + pot_k1 + pot_k2 ) #agrega el potencial elastico k en la ecuacion
    V
```

$$V = gm_1\left(-l_{10} - x_1\right)\sin\left(\theta\right) + \frac{k_1\left(l_{10} + x_1\right)^2}{2} + \frac{k_2\left(l_{20} + x\right)^2}{2}$$

Victor Alexis Bettachini Resolver
31 de may. de 2021
(editado el 31 de may. de 2021)

- El estiramiento del resorte de k_1 es colineal con x1. No tienen sentido pensar en proyecciones (si es lo que hiciste, que realmente no entiendo).
- ¿Porque negativos los k?

Lagrangiano

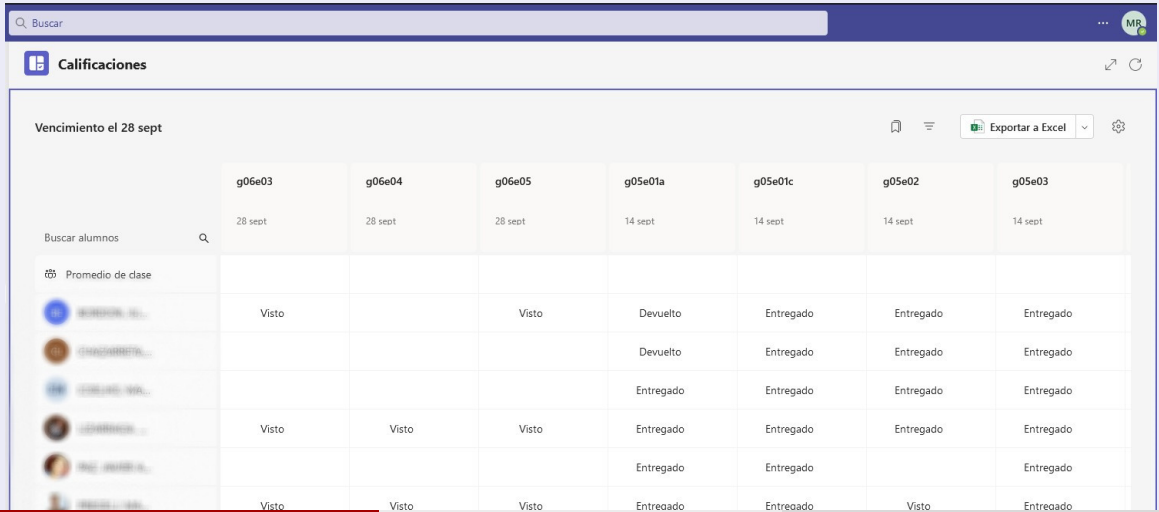
```
[ ] L = sym.Eq(sym.Symbol('\mathcal{L}'), (T.rhs - V.rhs))
    L
```

$$\mathcal{L} = -gm_1\left(-l_{10} - x_1\right)\sin\left(\theta\right) - \frac{k_1\left(l_{10} + x_1\right)^2}{2} - \frac{k_2\left(l_{20} + x\right)^2}{2} + \frac{\left(m_0 + m_1\right)\left(2\cos\left(\theta\right)\dot{x}\dot{x}_1 + \dot{x}^2 + \dot{x}_1^2\right)}{2}$$

ECUACIONES DE EULER

Individualized student follow-up at Microsoft Teams

A record of the weekly turn-up of assignments



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A course centred on code

- Theory: text + equations + executable cod in digital notebooks.

Inverted classroom

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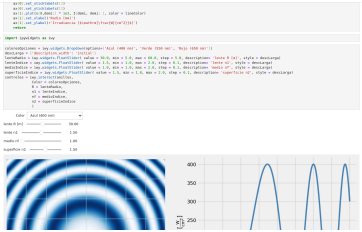

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