

# Institut für Quantentechnologien

DLR - QT

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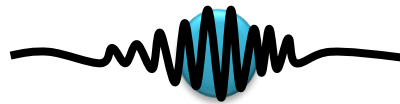
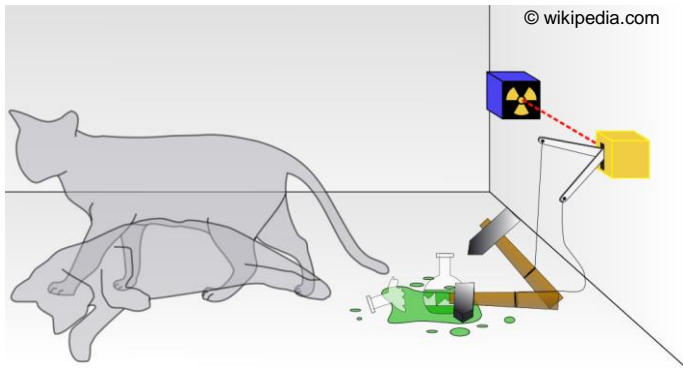
A photograph of the Earth as seen from space, showing the curvature of the planet, blue oceans, green landmasses, and white clouds. The image is positioned on the right side of the slide, partially overlapping the text.

Knowledge for Tomorrow

# Quantum Mechanics

$$\left(-\frac{\hbar^2}{m}\Delta + E_{pot}\right)\Psi(x, y, z, t) = -i\hbar \frac{\partial}{\partial t}\Psi(x, y, z, t)$$

$$\Psi(x, t) = A e^{2\pi i (vt - \lambda x)} = A e^{\frac{i}{\hbar}(Et - px)}$$



$$\lambda = \frac{h}{p} = \frac{h}{m v}$$



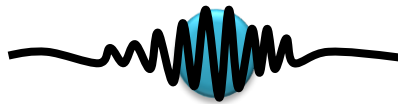
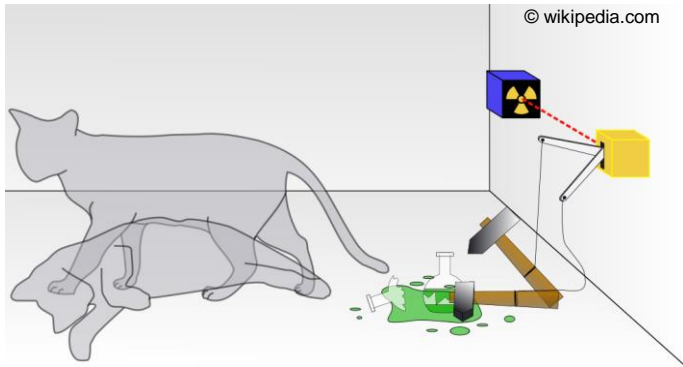
# Quantum Mechanics



# Quantum Technologies Earth Observation

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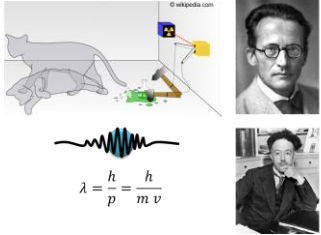
# Quantum Mechanics



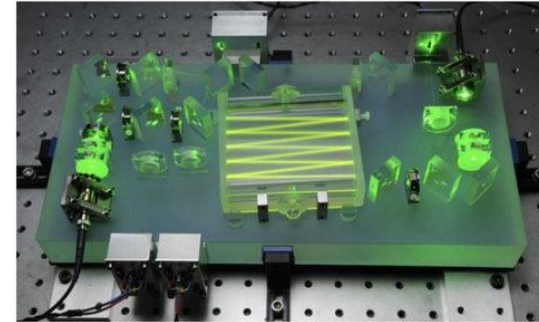
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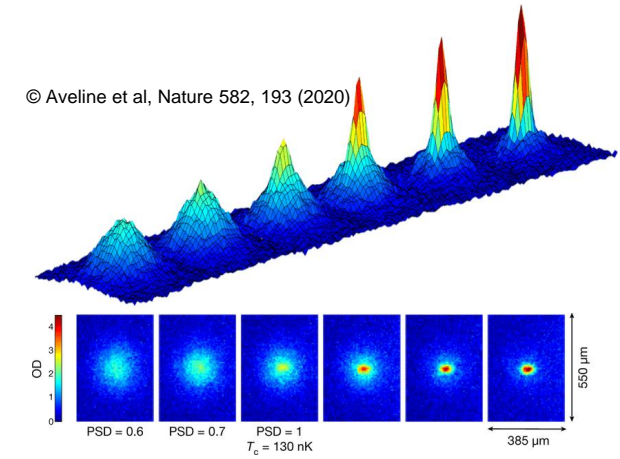
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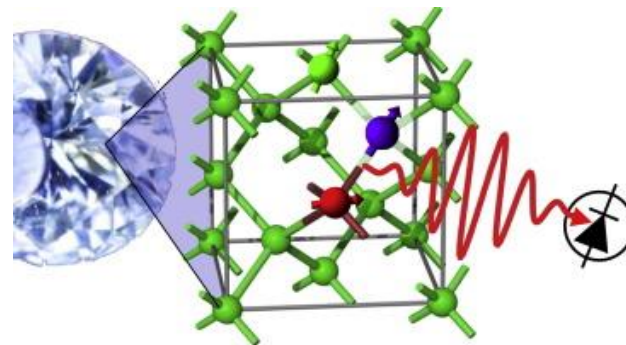
$$\lambda = \frac{h}{p} = \frac{h}{mv}$$



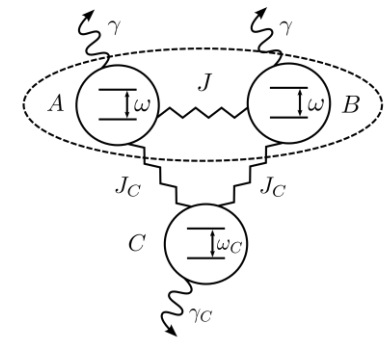
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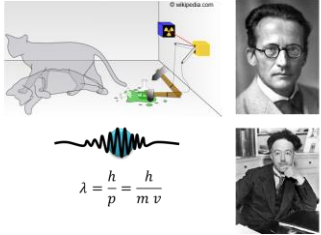
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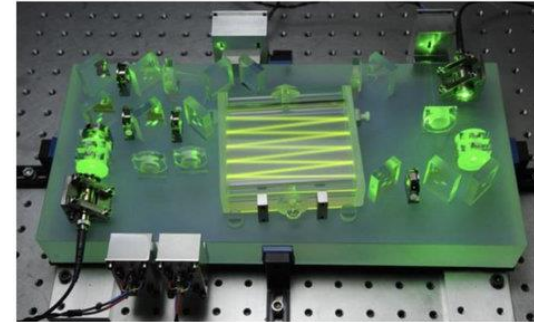
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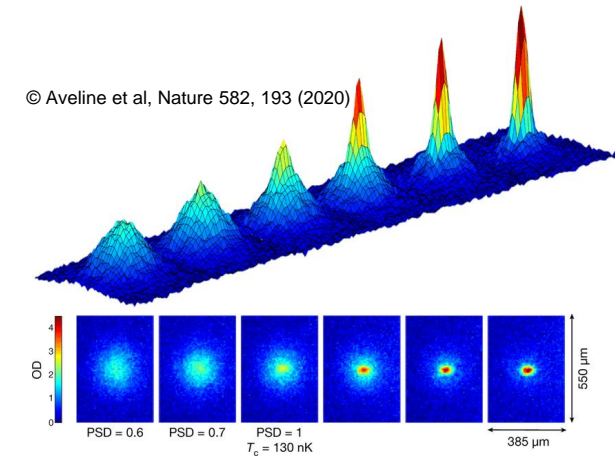
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## Quantum Technologies

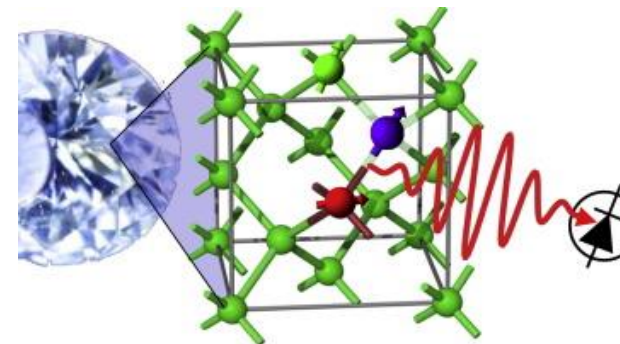
- **Sensing and Timing**
  - Inertial Sensing
  - Magnetic and Electric Fields
  - Precise Timing
  - Gravimetry and Gradiometry
  
- **Entanglement**
  - Communication
  - Computing



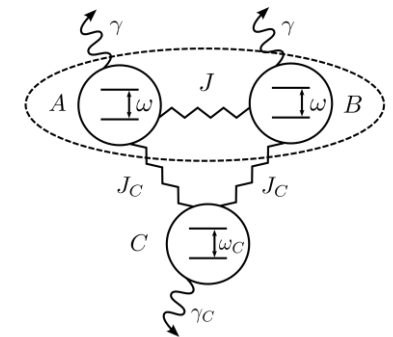
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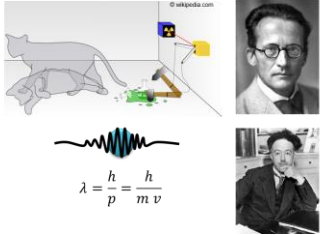
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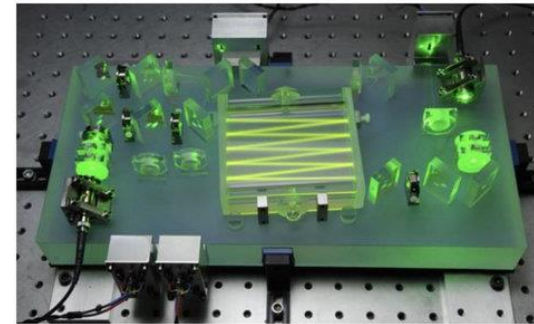
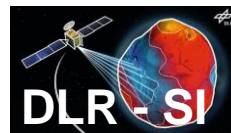
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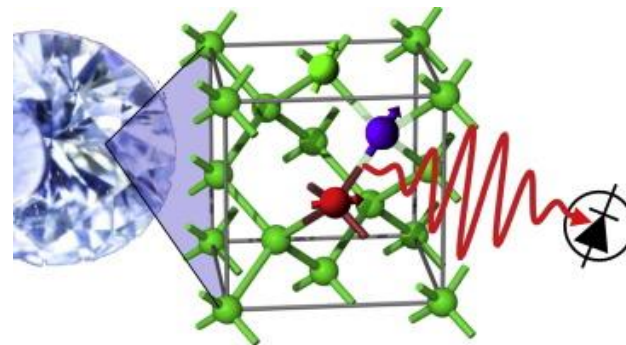
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## Quantum Technologies

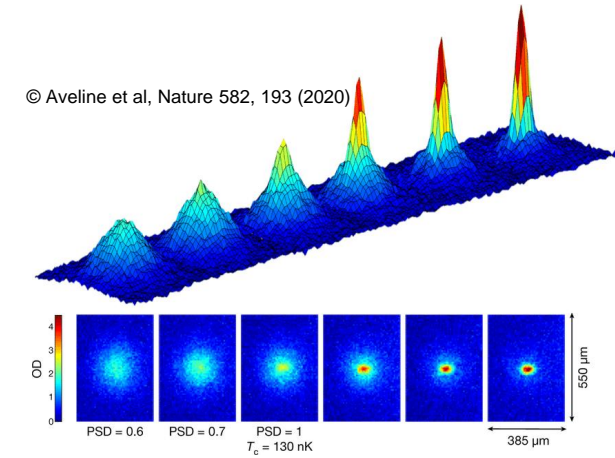
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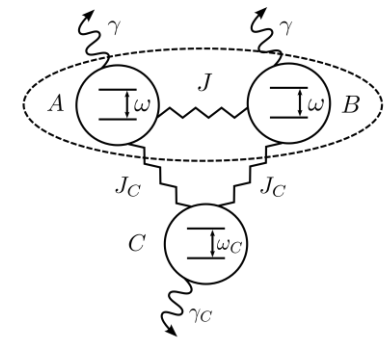
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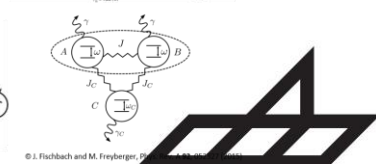
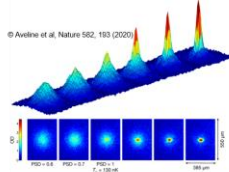
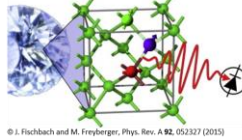
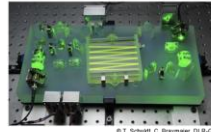
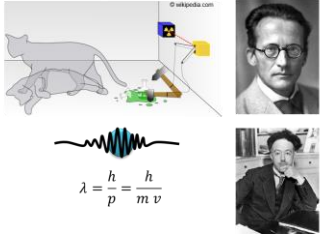
# Quantum Mechanics



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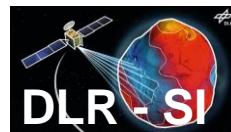
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## Quantum Technologies

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  - Communication
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- Global Observation
  - GRACE – FO – like
  - GOCE – like
  - Magnetic Fields
- Early Warning Systems
  - Flooding
  - Earthquakes
- Prospection
- External Effects
  - Solar Winds
- Chaotic Effects
  - Weather Predictions
- Other (outside Earth Observation)
  - Exploration
  - Fundamental Physics

