

Nobel Prize for Physics

On October 3, 2023 the Nobel Prize winner's announcement started. On December 10 prizes will be distributed.

Winners:

- **Pierre Agostini** - Hungarian-Austrian
- **Ferenc Krausz** - French
- **Anne L'Huillier** - French Swedish

Awarded for:

"For experimental methods that generate **attosecond (10^{-18} s) pulses of light** for the study of electron dynamics in matter"

Announced by:

The Royal Swedish Academy of Science

Cash prize:

11 million Swedish kronor (approximately Rs. **8.33 crore**)

About experiments:

Given humanity new tools for exploring the world of **electrons** inside atoms & molecules. Also demonstrated a way to create extremely **short pulses of light** that can be used to measure the **rapid processes** in which electrons move or change energy.

Anne L'Huillier contribution:

Discovered a new effect from the **interaction of laser light** with atoms in a gas in experiments in **1980s**.

Pierre Agostini contribution:

2001 – With these principles produced a series of pulses each of **250 attosecond**

Ferenc Krausz contribution:

2001 – Isolated a single pulse of **650 attoseconds** duration

Significance:

- Attosecond physics - able to look at the **minutest particles** at the **shortest timescales**.
- To study **rapid electron movements** & energy changes within atoms, molecules.
- To understand the world at a really minute scale with applications across **chemistry, biology & physics**
- To study molecular-level changes in blood - to identify diseases.
- Help in creating more efficient **electronic gadgets**.

More to know:

Anne L'Huillier - 5th women to win the prize.



The Nobel Prizes for 2023 in Physics has been awarded to Pierre Agostini, Ferenc Krausz and Anne L'Huillier | Photo Credit: Nobelprize.org

Electrons in matter move very fast, interacting on the order of a few hundred **attoseconds**.

Attoseconds physics deals with ways to capture these interactions

