

Maxwellian velocity distribution

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Principle

By means of the model apparatus for kinetic theory of gases the motion of gas molecules is simulated and the velocities determined by registration of the throw distance of the glass balls. This velocity distribution is compared to the theoretical Maxwell- Boltzmann equation.

Benefits

- For both demonstration and student experiments
- Unique experiment to quantitatively study kinetic gas theory
- Visualization of the Maxwell Boltzmann distribution

Tasks

1. Measure the velocity distribution of the "model gas".
2. Compare the result to theoretical behaviour as described by the Maxwell- Boltzmann distribution.
3. Discuss the results.

Learning objectives

- Kinetic theory of gases
- Temperature
- Gas- molecules
- Model kinetic energy
- Average velocity
- Velocity distribution

Scope of delivery

Kinetic gas theory apparatus	09060-00	1
Receiver with recording chamber	09061-00	1
PHYWE power supply, variable DC: 12 V, 5 A / AC: 15 V, 5 A	13540-93	1
Tripod base PHYWE	02002-55	2
Digital stroboscope	21810-93	1
Digital stopwatch, 24 h, 1/100 s and 1 s	24025-00	1
Beaker, Boro, high-form	46025-00	5
Spoon, stainless steel, 210mm	40874-00	1
Connecting cord, 32 A, 500 mm, red	07362-01	1
Connecting cord, 32 A, 500 mm, blue	07362-04	1

Necessary accessories

Precision Balance, Sartorius QUINTIX513-1S, 510 g / 0,001 g	49282-99
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