www.scienceinschool.org

Information revolution: how ultra-short bursts of light can help us improve data storage

Increasingly short timescales

You're familiar with milli- and micro- but now it's time to get fancy with scientific shorthand. Scientists often use prefixes to describe smaller and smaller quantities, take a look at table below to see how we can apply these prefixes to units of time.

Prefix	Unit of time	Abbreviation	In Standard Form	What's this short?
milli-	millisecond	ms	1×10^{-3}	The duration of a normal camera flash
micro-	microsecond	μs	$1x\times10^{-6}$	Roughly the time it takes light, which travels fastest of anything in the universe, to travel 1 km
nano-	nanosecond	ns	1×10^{-9}	Approximately the duration of one reaction in a nuclear chain reaction
pico-	picosecond	ps	1×10^{-12}	Roughly the time it took for electromagnetic radiation to form after the Big Bang
femto-	femtosecond	fs	1×10^{-15}	The movements of molecules and atoms happen on femtosecond timescales
atto-	attosecond	as	1×10^{-18}	An attosecond is to a second, roughly what a second is to twice the lifetime of the universe (32 billion years)
zepto-	zeptosecond	zs	1×10^{-21}	Some of the shortest processes known to man. The time it takes for light to travel across a hydrogen molecule![1]

[1] Grundmann S et al. (2020) Zeptosecond birth time delay in molecular photoionization. *Science* **370**: 339–341 doi: 10.1126/science.abb9318