

What if there were no atoms?

David Atkinson

Rijksuniversiteit Groningen

Abstract

If Parmenides had been right and Democritus wrong, and a piece of gold could be indefinitely subdivided into smaller and smaller pieces of gold, classical physics tells us that energy would not have been conserved. Worse, spontaneous creation of energy ex nihilo would have been at any time possible. I will explain how recent work in the philosophy of science leads to these conclusions, and how a Zeno gun could have been designed for the military establishment.

The above conclusions survive the introduction of the theory of relativity, but do they survive the quantum revolution?