

TALK

Through Two Doors at Once

Anil Ananthaswamy • Journalist in Residence 2023
at the Heidelberg Institute for Theoretical Studies (HITS)

In the early 1800s, Thomas Young performed a homespun experiment with a sunbeam split into two, and challenged our understanding of the nature of light. With the birth of quantum mechanics, starting in the early 1900s, this “double-slit” experiment – now done with individual particles – started challenging our ideas about the nature of reality. How can a single particle behave both like a particle and a wave? Does a particle, or indeed reality, exist before we look at it, or does looking create reality? Is there a place where the quantum world ends and the familiar classical world of our daily lives begins, and if so, can we find it? In the 1960s, Richard Feynman said that the deceptively simple double-slit experiment contains the “central mystery” of the quantum world. Even he would have been amazed at just how far physicists have pushed this experiment, and how it still continues to confound and challenge our intuitions about the nature of reality.



June 21, 2023 • 16:00

Mathematikon • Conference Room 5/104 • INF 205 • 69120 Heidelberg
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