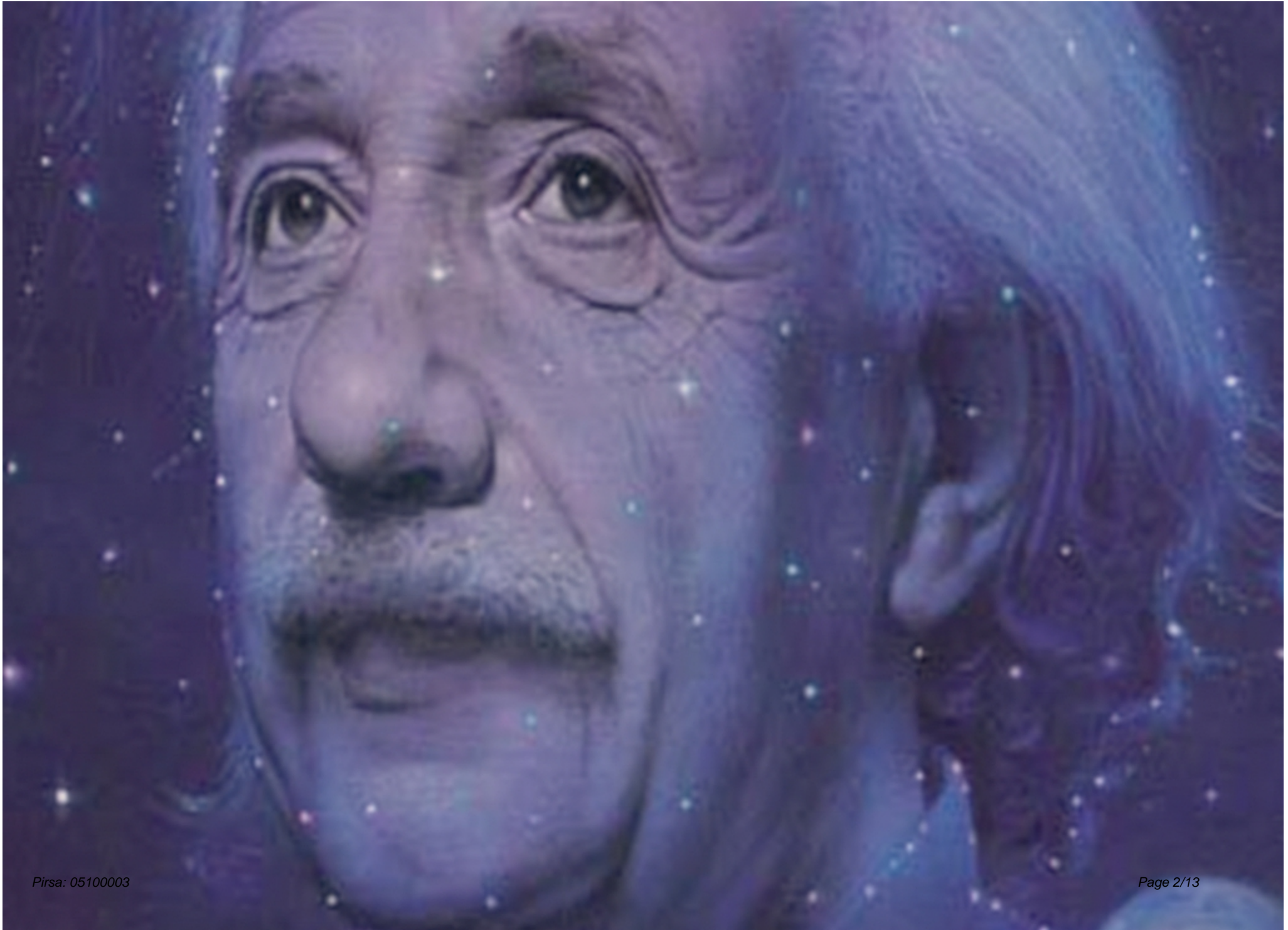


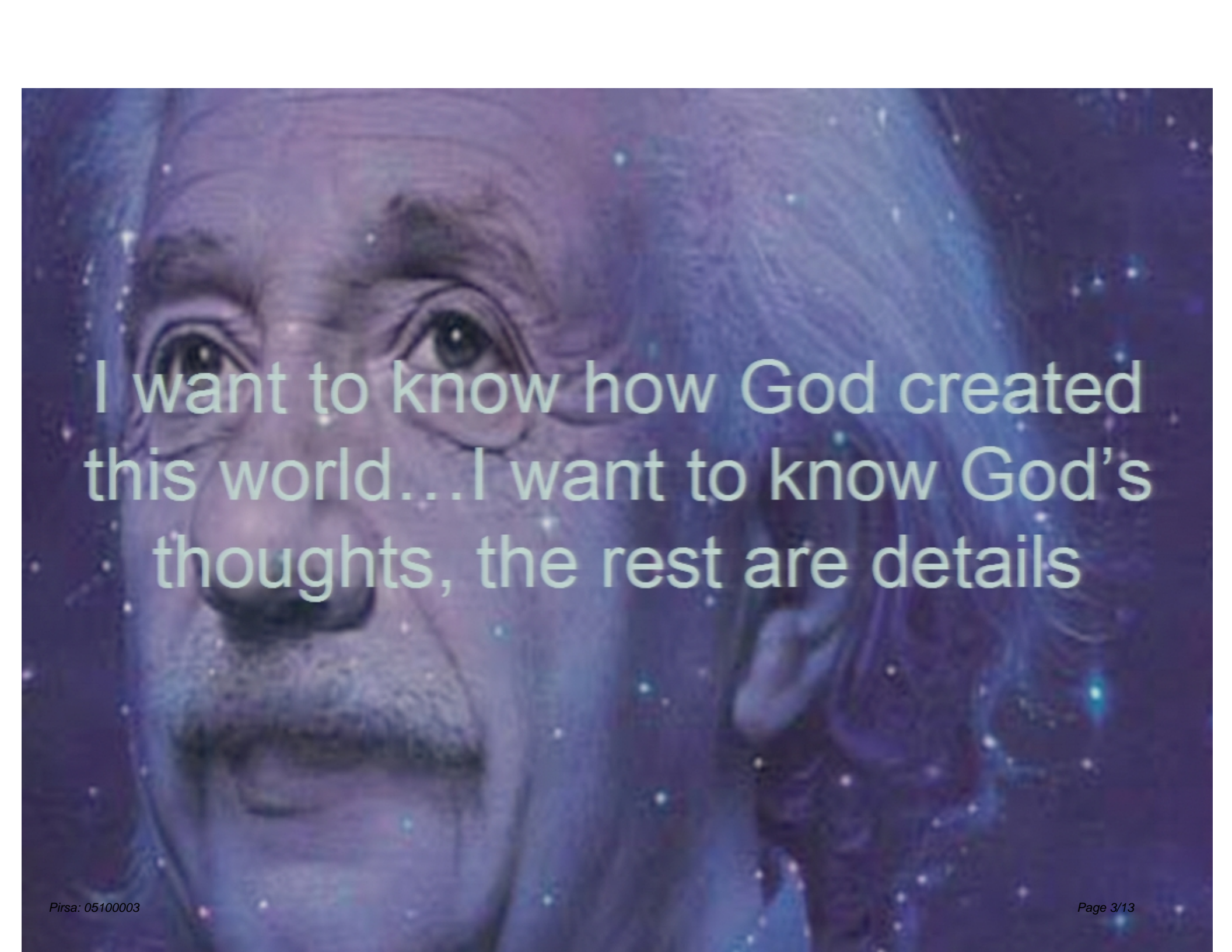
Title: March 1905: Einstein\'s Revolutionary Quantum Paper

Date: Oct 01, 2005 04:00 PM

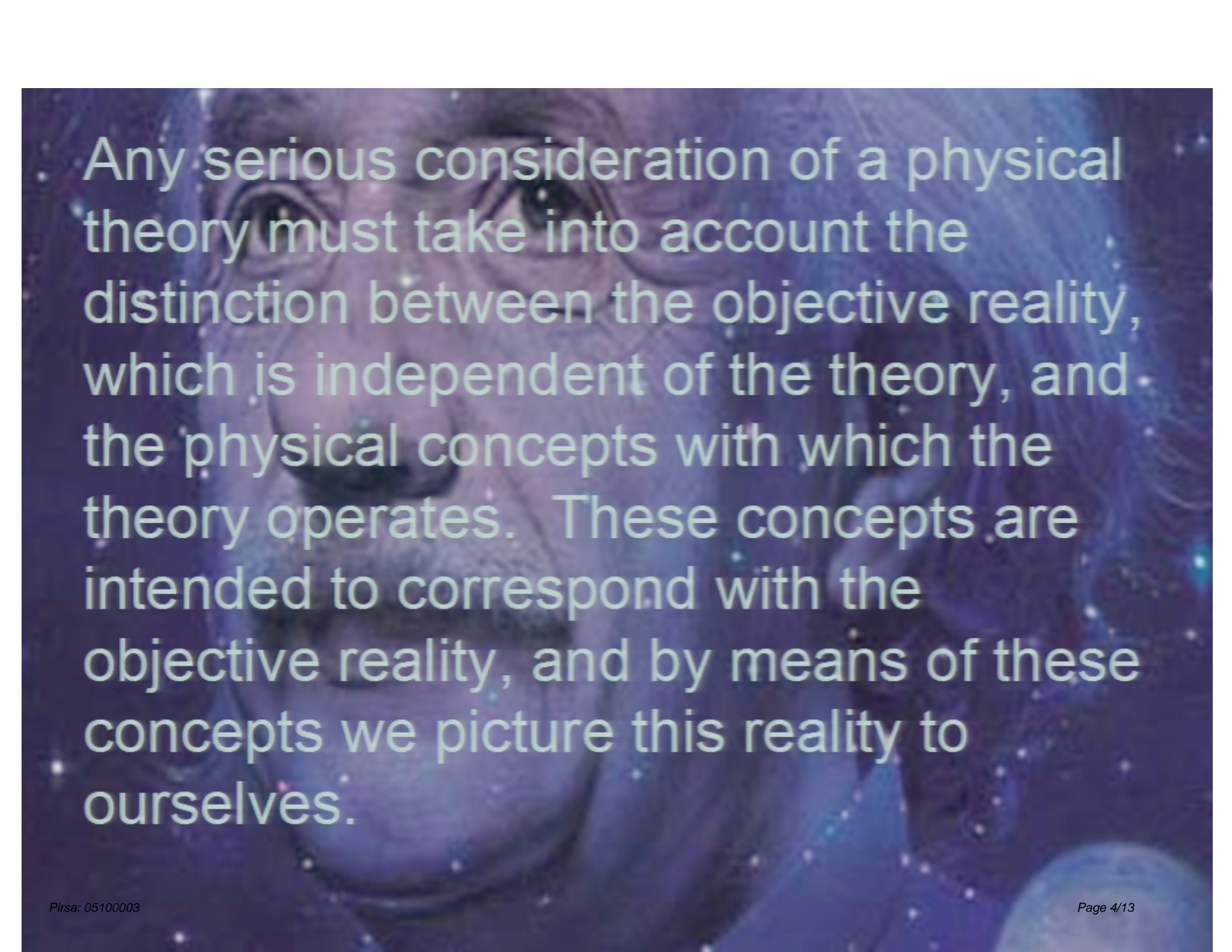
URL: <http://pirsa.org/05100003>

Abstract: Einstein\'s March paper, the only paper that Einstein himself called revolutionary, directly challenged the firm beliefs of all physicists. With compelling evidence in their support, physicists regarded the nature of light as a closed chapter: light was a continuous electromagnetic wave. Einstein countered this entrenched belief with the claim that light was a stream of discontinuous, isolated particles. The age-old conundrum of continuity vs. discontinuity was again called into play. Einstein\'s contemporaries totally rejected his idea and they even apologized for his having "gone overboard." In the end, however, Einstein\'s light particle became part of the woodwork of physics. <kw>John S Rigden, Einstein, light, electromagnetic, continuity, discontinuity, atoms, wave lengths, photoelectric effect </kw>



A composite image featuring a close-up of Albert Einstein's face, which is semi-transparent and overlaid on a dark blue background filled with numerous small, bright white stars, resembling a night sky or a deep space field. The text is centered over the face in a white, sans-serif font.

I want to know how God created
this world...I want to know God's
thoughts, the rest are details



Any serious consideration of a physical theory must take into account the distinction between the objective reality, which is independent of the theory, and the physical concepts with which the theory operates. These concepts are intended to correspond with the objective reality, and by means of these concepts we picture this reality to ourselves.



LIGHT AND ATOMS

1905 Paper #1
March 17, 1905

The Nature of Light



Light and Atoms



Thermodynamics and
Kinetic Theory



Mechanics, Thermo. and
Kinetic Theory



Light and the Ether



Mechanics and
Electromagnetism

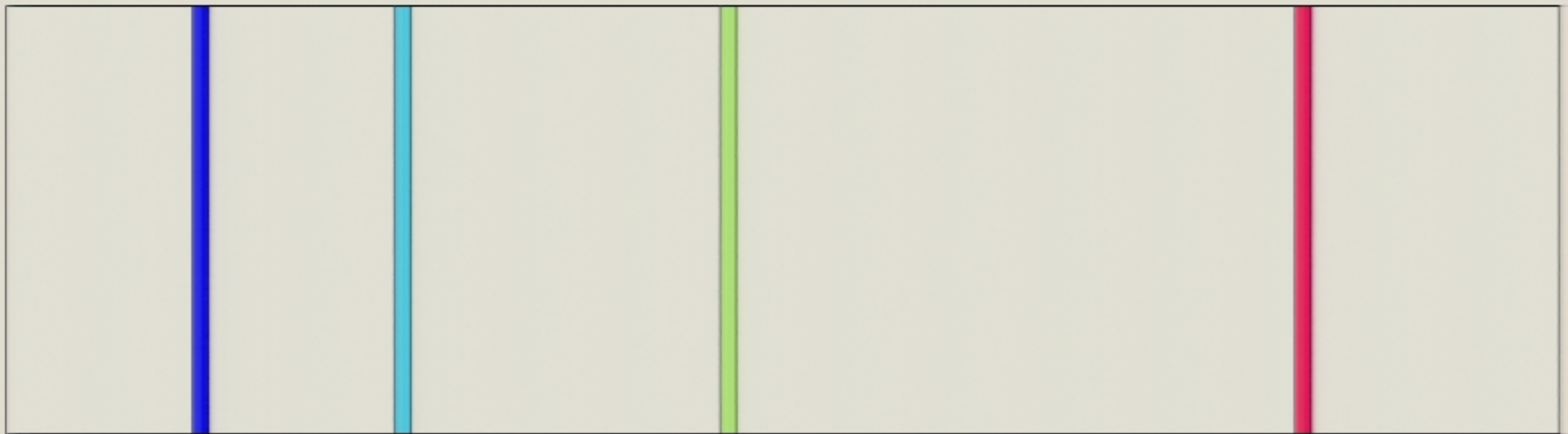
The background of the slide is a stylized, blue-toned portrait of Albert Einstein. His face is the central focus, with his characteristic wild hair and mustache. The background is filled with numerous small, bright white and blue stars, giving it a cosmic or night-sky appearance. In the upper left corner, there is a solid orange 3D cylinder.

LIGHT AND ATOMS

1905 Paper #1
March 17, 1905

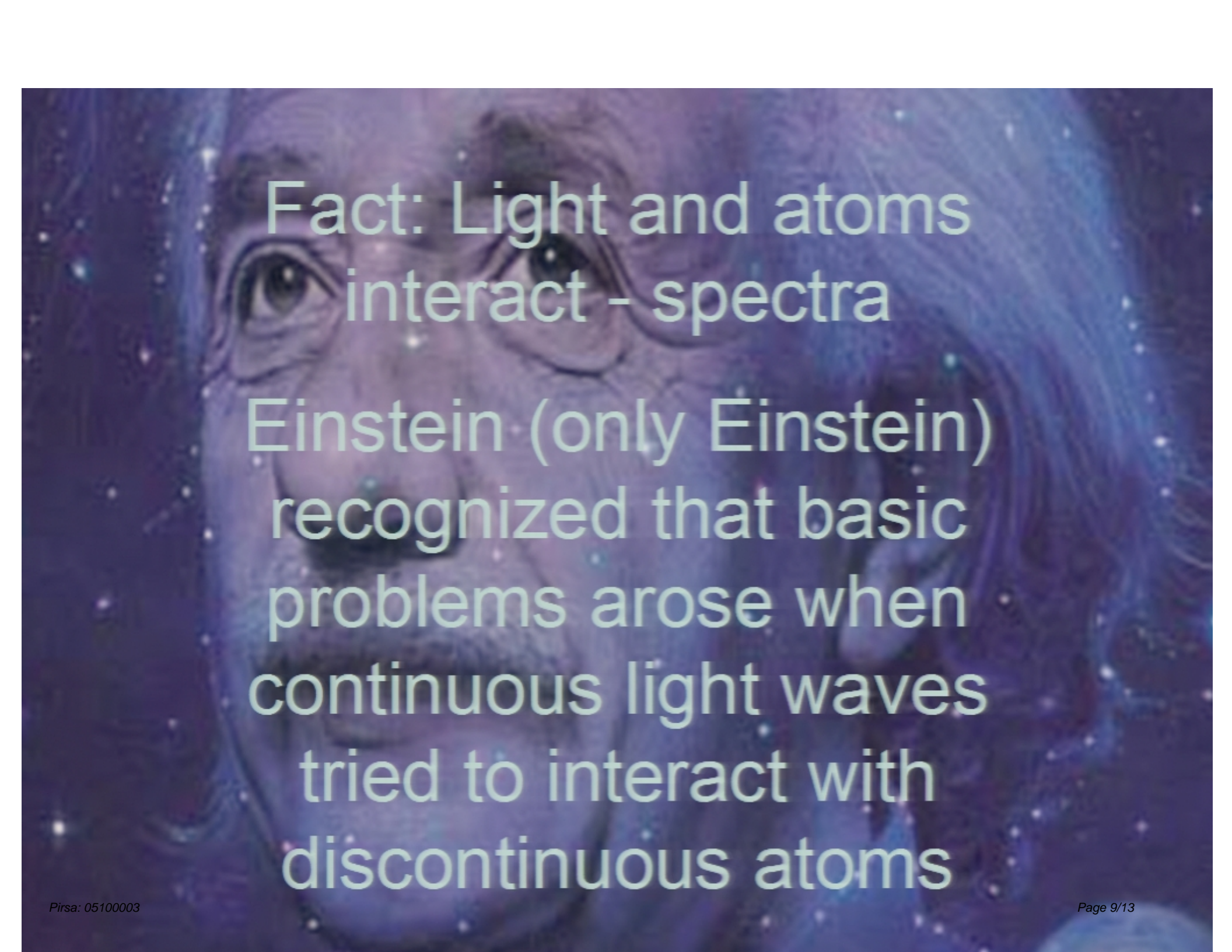
The Nature of Light

Wavelengths (in Angstroms) of spectral lines



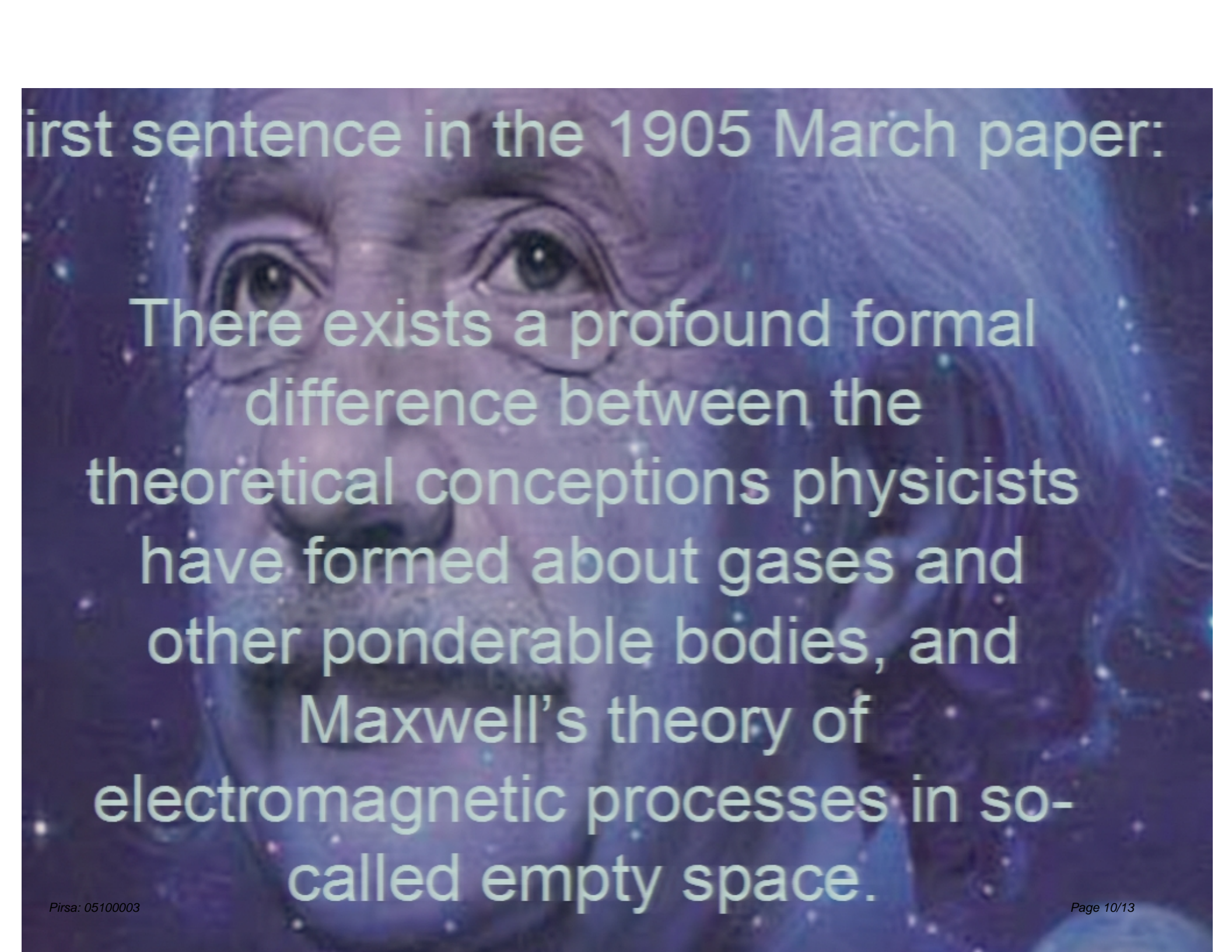
4,101.20 4,340.10 4,860.74 6,562.10

Fact: Light and atoms interact



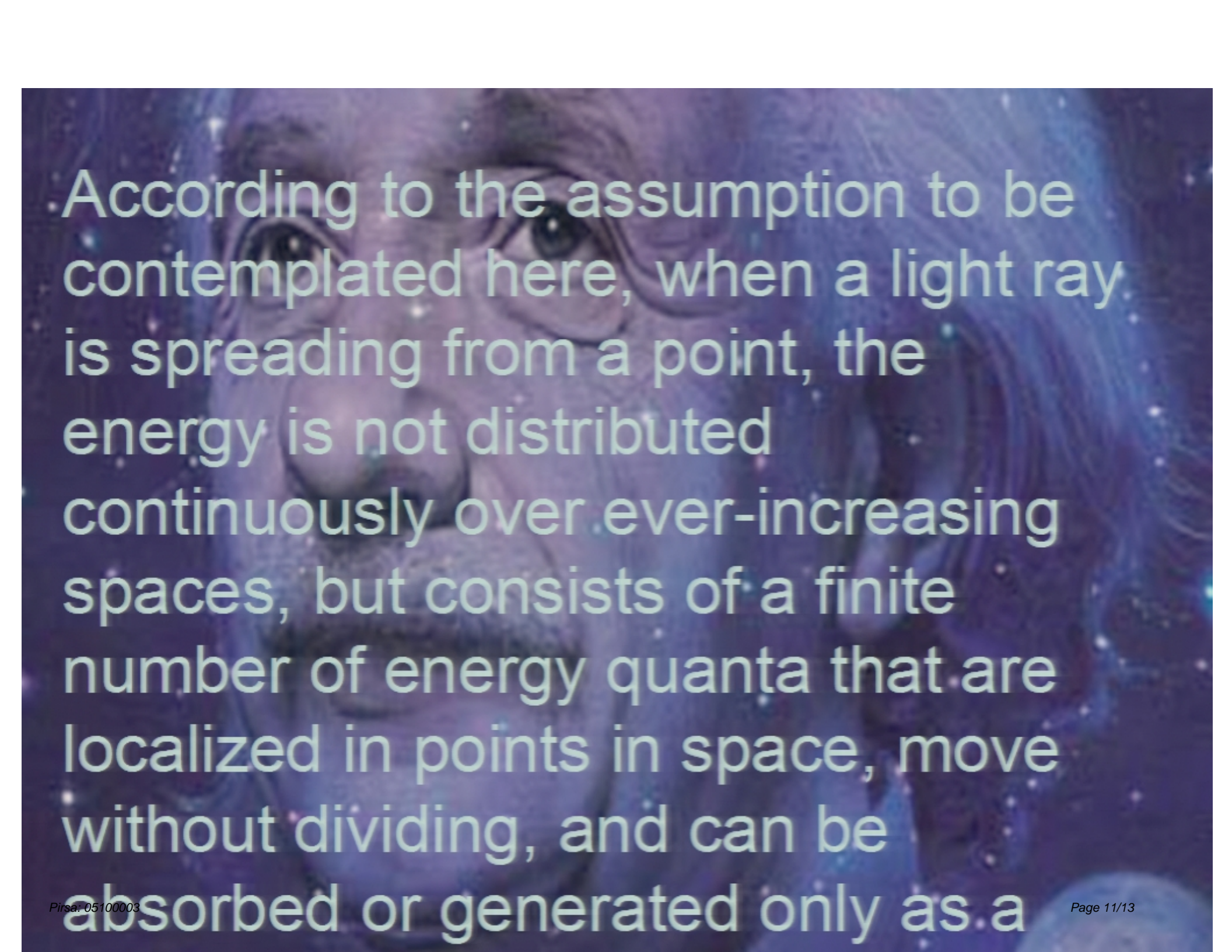
Fact: Light and atoms
interact - spectra

Einstein (only Einstein)
recognized that basic
problems arose when
continuous light waves
tried to interact with
discontinuous atoms

A portrait of Albert Einstein, looking upwards with a thoughtful expression. The background is a deep blue space filled with stars and nebulae, creating a cosmic atmosphere. The text is overlaid on this image in a light green, sans-serif font.

first sentence in the 1905 March paper:

There exists a profound formal difference between the theoretical conceptions physicists have formed about gases and other ponderable bodies, and Maxwell's theory of electromagnetic processes in so-called empty space.



According to the assumption to be contemplated here, when a light ray is spreading from a point, the energy is not distributed continuously over ever-increasing spaces, but consists of a finite number of energy quanta that are localized in points in space, move without dividing, and can be absorbed or generated only as a

