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46 Complicated: Jens Hjörleifur Bárðarson focuses on, among other things, topological insulators.

18 LIGHT

18 Tweezers Made of Light

Many biomolecules move through cells like microscopic machines. Often, however, it isn't known what forces these molecules generate or how fast the molecules act or move. That's why Stephan Grill from the Max Planck Institute of Molecular Cell Biology and Genetics in Dresden decided to specialize in measuring molecular forces. He uses optical tweezers to pull gently on DNA strands and to study proteins.

24 The Making of a Quantum Movie

Until even just a few years ago, no camera was fast enough to film the movements of electrons. Ferenc Krausz, Director of the Max Planck Institute of Quantum Optics in Garching, and his team can now do this using new techniques, creating the basis for optimizing processes in chemistry and electronics.

32 Between Spotlight and Shadow

The main figures in Caravaggio's paintings seem to be sitting in a spotlight. There were numerous legends surrounding the painter and his lighting techniques. Sybille Ebert-Schifferer, Director at the Bibliotheca Hertziana in Rome, wants to demystify Caravaggio's image.

ON THE COVER Light is our lifeblood, the inspiration for artists, and an indispensable tool in science and technology. Reason enough for UNESCO to declare 2015 the International Year of Light. The image shows light in optical fibers.

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In view of the challenges to peace and security in Europe, it's time for EU member states to take joint action.

FOCUS

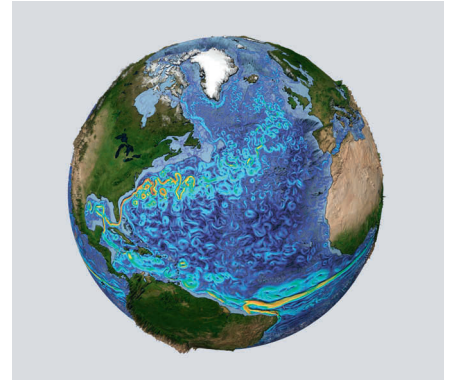
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Personal Portrait:
Jens Hjørleifur Bárðarson

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"I think, therefore I am" – René Descartes' thinking gave him the certainty that he did, in fact, exist. Lucid dreamers are able to reflect on their own thoughts even during sleep.

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- 60** **Secret Code in a Laser Pulse**
Quantum cryptography aims to protect data transmissions against eavesdropping. This is what researchers from the Max Planck Institute for the Science of Light are working on.

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Researchers want to predict what the Earth's climate will be like 10 or 15 years from now, and in this way also explain why, since 1998, the Earth has been heating up more slowly than models predict.

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