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COVER
Artist’s conception of the charge distribution associated with virtual particles surrounding an electron. Spin precession measurements in molecular thorium oxide show that any deviation from perfect roundness (as depicted here, greatly exaggerated) must be smaller than one part in a quadrillion. This finding strongly constrains proposed extensions to the Standard Model of particle physics. See pages 255 and 269.

Image: Gary Pikovsky

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The ACME Collaboration et al.
Spin precession measurements in the polar molecule thorium monoxide indicate a nearly spherical charge distribution of an electron.

272 Single-Crystal Linear Polymers Through Visible Light–Triggered Topochemical Quantitative Polymerization
L. Dou et al.
Conjugated dye molecules can be polymerized through a topochemical reaction to produce exceptionally long, ordered chains.

277 Nonenzymatic Sugar Production from Biomass Using Biomass-Derived γ-Valerolactone
J. S. Luterbacher et al.
A solvent sourced from biomass may offer a cost-effective means of breaking down cellulose for biofuels production.

281 Atomic-Scale Variability and Control of III-V Nanowire Kinetics
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Fluctuations and defects in III-V nanowire growth can be avoided by growing at a low V/III ratio.

284 Temporal Constraints on Hydrate-Controlled Methane Seepage off Svalbard
C. Berndt et al.
Seasonal gas hydrate destabilization has been releasing methane from marine sediments near Svalbard for at least 3000 years.

287 Conserved Class of Queen Pheromones Stops Social Insect Workers from Reproducing
A. Van Oystaeyen et al.
Social insect queens use an ancient, evolutionarily conserved class of pheromones to prevent worker reproduction.

290 Identification of a Plant Receptor for Extracellular ATP
J. Choi et al.
An Arabidopsis lectin receptor kinase, DORN1, is the plant receptor for extracellular adenosine triphosphate.

294 Btk29A Promotes Wnt4 Signaling in the Niche to Terminate Germ Cell Proliferation in Drosophila
N. Hamado-Kawaguchi et al.
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298 Changes in rRNA Transcription Influence Proliferation and Cell Fate Within a Stem Cell Lineage
Q. Zhang et al.
The RNA polymerase I regulatory complex promotes dynamic regulation of ribosomal RNA synthesis within the Drosophila germline.