**GENERAL**

**EDUCATIFire and ice – a good plON and OUTREACH**

**Oace to search for life?JN-GOING FLIGHT PROGRAM**

**FUTURE FLIGHT PROGRAM - ISSA PHASE I/II/III**

EXACT Investigatoörn HelbertInstitute of rs Present Results at LT-22

Two posters on the flight definition experiment Experiments Along Coexistence near Tricriticality (EXACT) were presented at the 22nd International Low Temperature Conference (LT-22) held in Helsinki in early August. Professor Norbert MPlanetary ResearchDLRRutulders of the University of Delaware, one of the co-investigators on Eherfordstrasse 2, 12489 XACT, presented his work on deriving the equations for the propagation of heatBerlinGERMANYjoern.helbe pulrt@dlr.de Creating a habses in miitable environment is a xtures of helium-3 and helium-4. His poster was entcomplex process involvinitled "A Nonlinear Wave Equation for Second-Sound Propagation in 3He-4He Mixtures". Also at LT-22, EXACT's work on developing a nano-Kelvin resolution thermometer for the temperatures below 1K was presented byg a wide variety of inte Dr. John Panek of JPL. His poster was entitled "A High-Resolution Thermometer for the Temperature Range 0racting processes. A pre.75-1.0 K".

**ISSUES AND requisite for any biologCONCERNS**

**SCIENCE HIGHLIGHTS**

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Quantum tunneling across spin doical activity is an enermains in a Bose-Einstein condensate.

**MIT Group gy source. The terrestriExplores Boundaryal example of the black between Domains in a Condensate**

Wolfgangsmokers shows how effici Ketterle ofent geothermal processes MIT reports are as an energy sourcethat a paper titled "Quantum tunneling across spin domains in a Bose-Einstein conde.There is ample morpholonsate" was recently published in Physical Review Letters (Phys. gical evidence for contiRev. Lett. **83**, 661-665 (1999)). The authors D.M. Stamper-Kurn, H.-J. Miesner, A.P. Chikkatur, S. Inouye, J. Stenger, nuous and episodic volcaand W. Ketterle dnic activity over the geescribe dynamics in a condensate conological history of Marssisting of two immiscible components. In case of t. The youngest ages detewo immiscible fluids, gravity tries to localize the heavier fluid below thrmined by the crater size lighter one. When the e-frequency measurementsheavier are about 2 Ma suggesti one is placed on top of the lighter one, a metastable situation arises. The analogous situation was prepared by the MIT group in a spinor Bong that the volcanoes arse-Einstein condensate,e potentially still acti with a magnetic field gradient playing the role of gravity. For a sufficiently strong gradient, tunnelve today. While there ising of one compon no direct evidence for ent through the other was observed volcanic activity the liand led to a stable equilibrium state. The observation of the tunneling rates provides a sensitive probe of the boundary existing between the two immiscible spin domains.

**UPCOMING EVENTS**