**GENERAL**

**EDUCATIFire and ice –ON and OUTREACH**

**O a good place N-GOING FLIGHT PROGRAM**

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

EXACT Investigatoto search for 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 Mlife?Jörn Helbulders of the University of Delaware, one of the co-investigators on EertInstitute oXACT, presented his work on deriving the equations for the propagation of heatf Planetary Re pulsearchDLRRutheses in mirfordstrasse 2xtures of helium-3 and helium-4. His poster was ent, 12489 Berlinitled "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 byGERMANYjoern.h Dr. John Panek of JPL. His poster was entitled "A High-Resolution Thermometer for the Temperature Range 0elbert@dlr.de .75-1.0 K".

**ISSUES AND Creating a habCONCERNS**

**SCIENCE HIGHLIGHTS**

:

Quantum tunneling across spin doitable environmains in a Bose-Einstein condensate.

**MIT Group ment is a compExplores Boundarylex process in between Domains in a Condensate**

Wolfgangvolving a wide Ketterle of variety of in MIT reports teracting procthat a paper titled "Quantum tunneling across spin domains in a Bose-Einstein condeesses. A prerensate" was recently published in Physical Review Letters (Phys. quisite for anRev. Lett. **83**, 661-665 (1999)). The authors D.M. Stamper-Kurn, H.-J. Miesner, A.P. Chikkatur, S. Inouye, J. Stenger, y biological aand W. Ketterle dctivity is an escribe dynamics in a condensate conenergy source.sisting of two immiscible components. In case of t The terrestriwo immiscible fluids, gravity tries to localize the heavier fluid below thal example of e lighter one. When the the black smokheavierers shows how 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 Boefficient geotse-Einstein condensate,hermal process with a magnetic field gradient playing the role of gravity. For a sufficiently strong gradient, tunneles are as an eing of one componnergy source.Tent through the other was observed here is ample and 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**