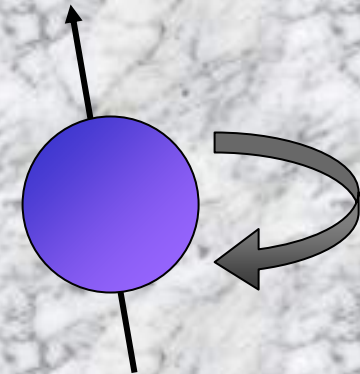
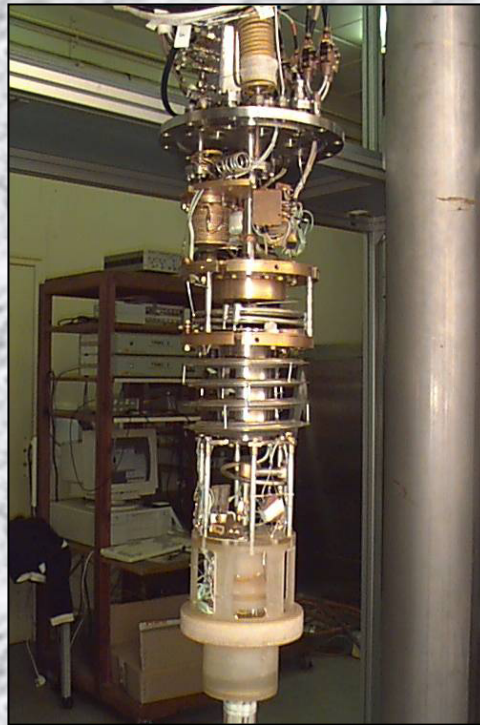
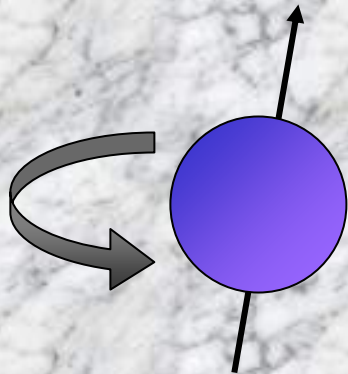


NMR in Superfluid Helium-3 in Non-Hydrodynamic Regime



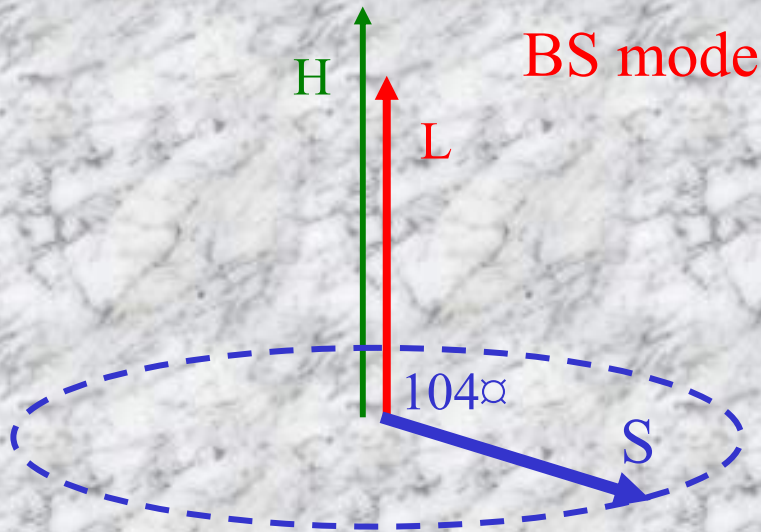
CRTBT-CNRS Grenoble

In memory of OLLI LOUNASMAA

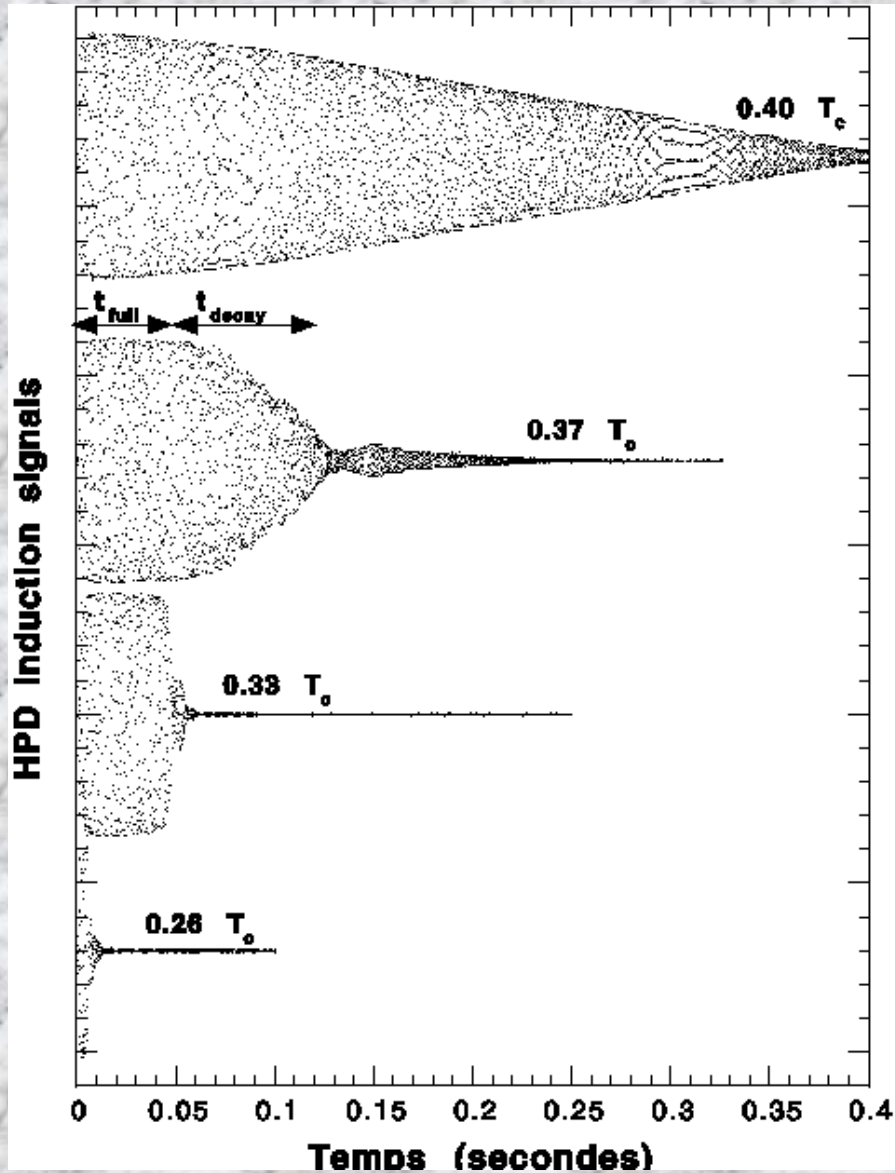
- **Olli Lounasmaa and Piotr Kaptza.**
- **1977, The scientific subject can change in a few minutes.**
- **1979, Nuclear stage for ROTA project.**
- **1981, First ROTA experiment** O.T.Ikkala, G.V.Volovik, P.Y.Hakkonen, Yu.M.Bunkov, S.T.Islander, G.A.Haradze "MNR of rotated superfluid $^3\text{He-B}$ " JETP Lett, 35, 416, (1982)
- **ROTA-2** P.J.Hakonen, M.Krusius, M.M.Salomaa, J.T.Simola, Yu.M.Bunkov, V.P.Mineev, G.E.Volovik "Magnetic Vortices in Rotating Superfluid $^3\text{He-B}$ " Phys.Rev.Lett, 51 1362, 1983.
- **HPD in ROTA** Yu.M.Bunkov, P.J.Hakonen "Simultaneous Spin and Space Rotation Experiment" J. Low. Temp.Phys. 83, 323, 1991
- **Cosmology in ^3He** C.Bauerle, Yu.M.Bunkov, S.N.Fisher, H.Godfrin, G.R.Pickett Nature 382, 332 (1996), V.M.H.Ruutu, V.B.Eltsov, A.J.Gill, T.W.B.Kibble, M.Krusius, Yu.G.Makhlin, B.Placais, G.E.Volovik Nature 382, 334 (1996),

Catastrophic Relaxation

- Yu.M.Bunkov, V.V.Dmitriev, Yu.M.Mukharsky, J.Nyeki, D.A.Sergatskov, Europhys.Lett, 8, 645, (1989)
- Yu.M.Bunkov, V.V.Dmitriev, Yu.M.Mukharsky, J.Nyeki, D.A.Sergatskov, I.A.Fomin, Physica B, 165, 675, (1990)



The HPD signals at 6 bar



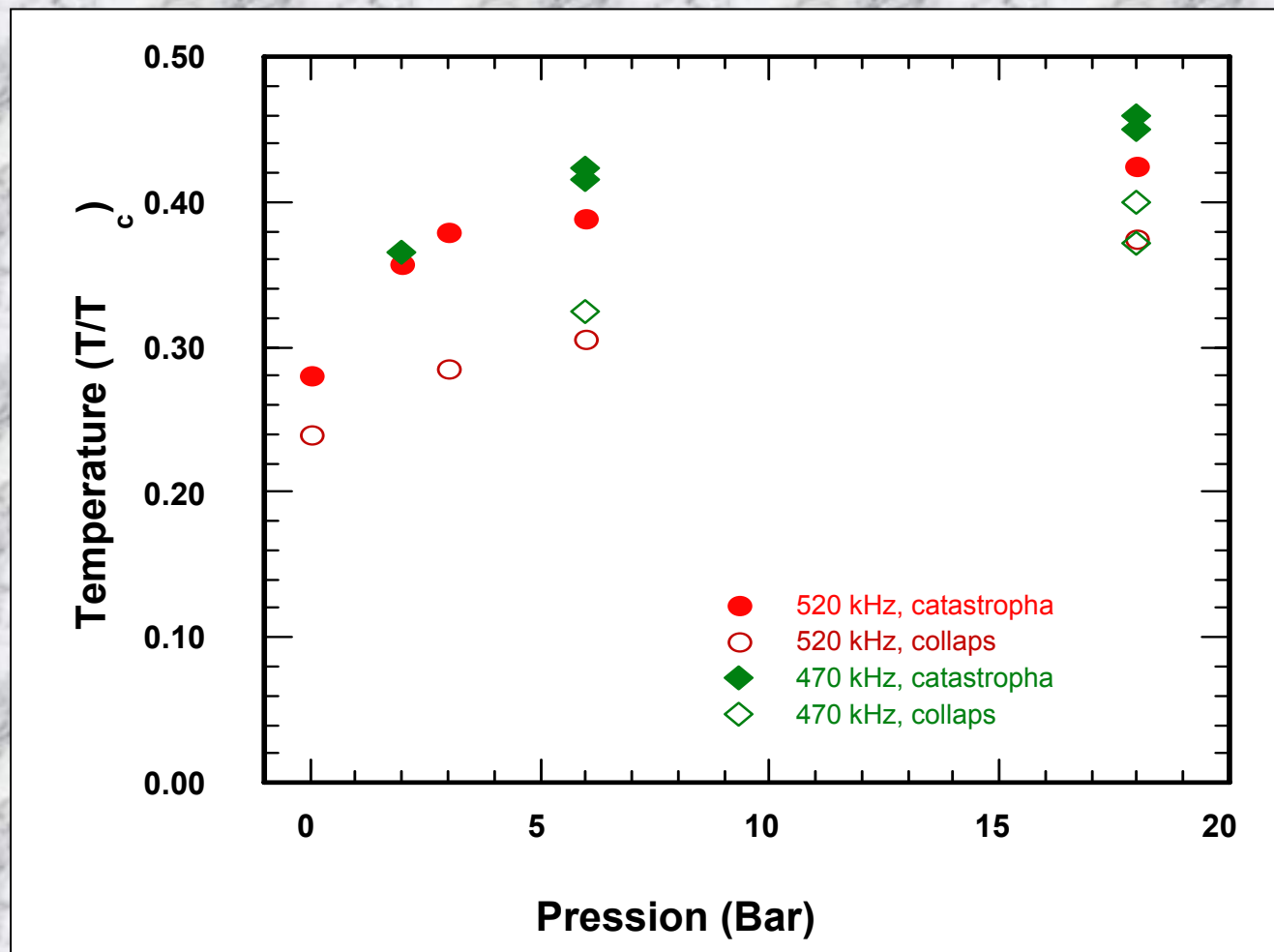
Classique HPD signal

Catastropha

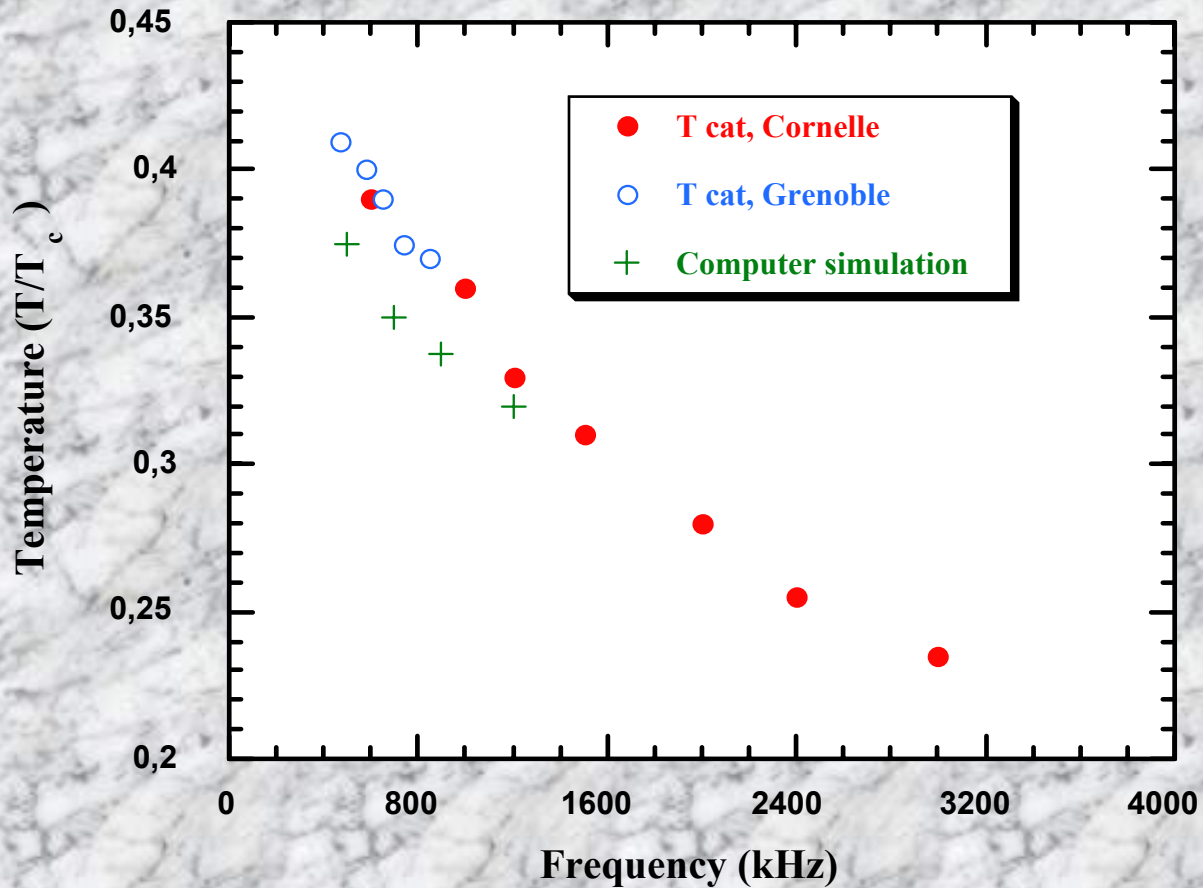
The cell full of HPD

Collaps and PS

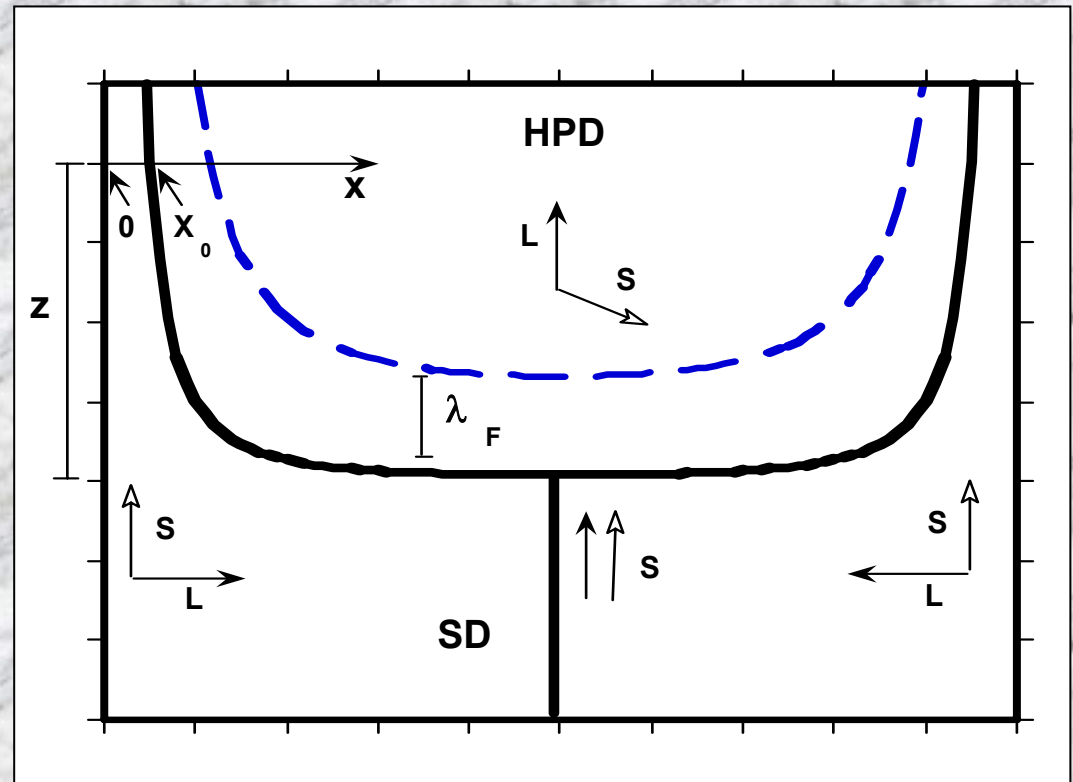
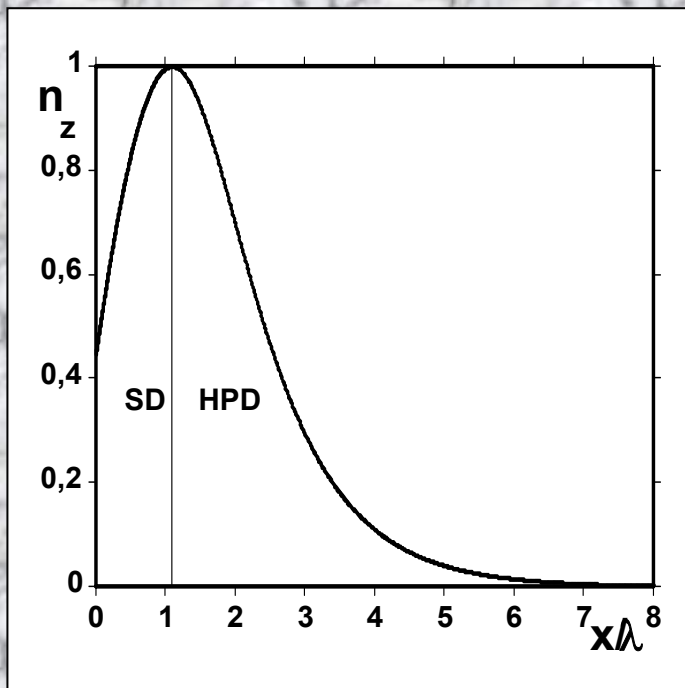
The temperature of catastrophic relaxation and collapse measured by CW NMR.



The temperature of catastrophic relaxation as function of NMR frequency.

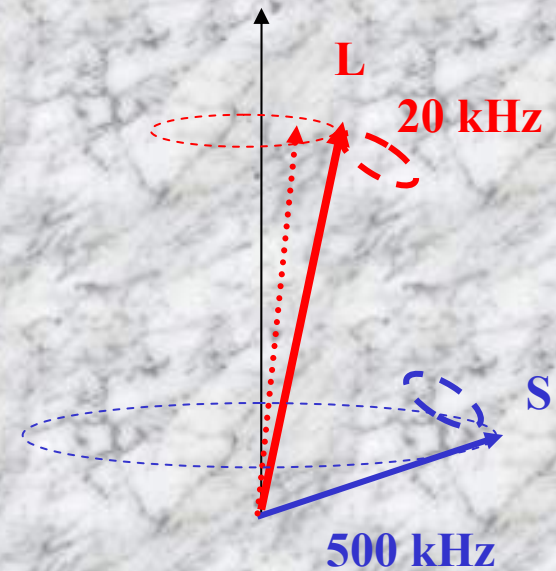
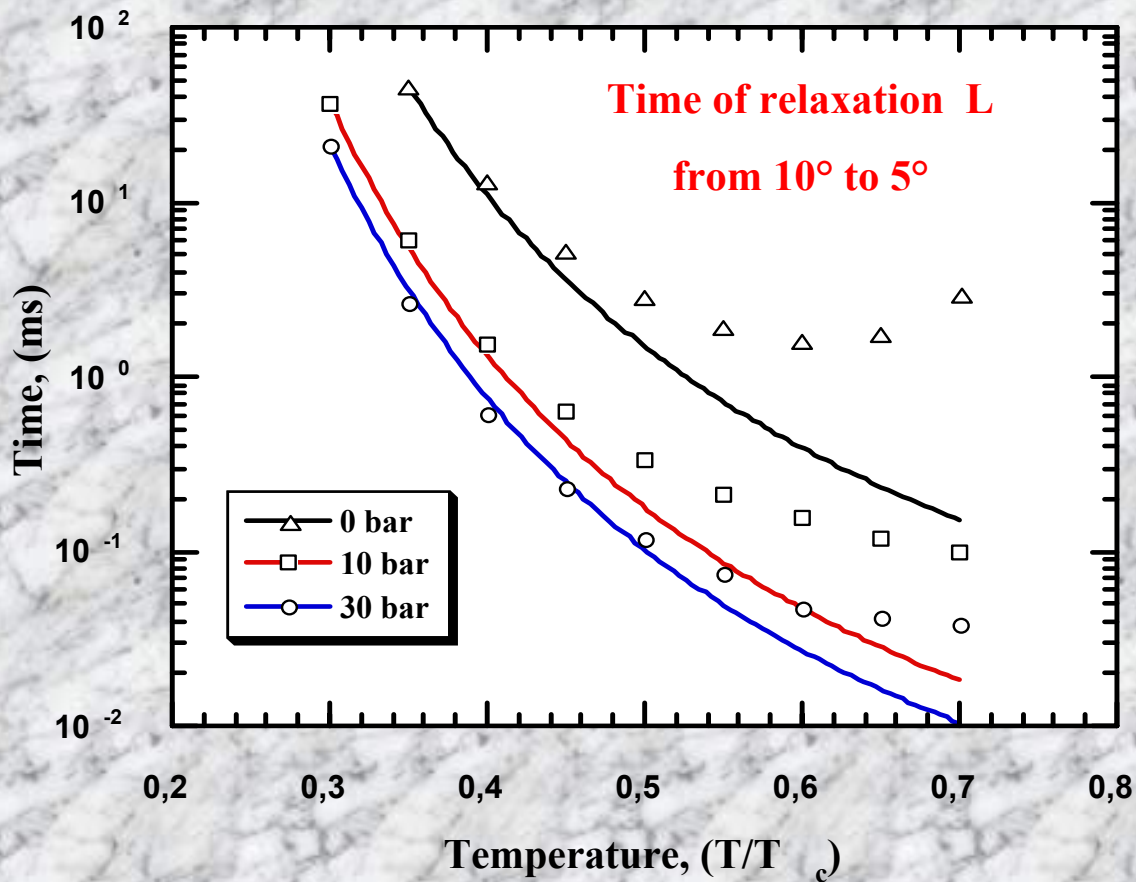


Yu.M.Bunkov, O.D.Timofeevskaya, G.E.Volovik
 Nonwetting conditions for coherent quantum
 precession in superfluid $^3\text{He-B}$,
 Phys. Rev. Lett., v. 73. p. 1817, (1994)



The characteristic time of restoring the B-S solution for different pressures and temperatures

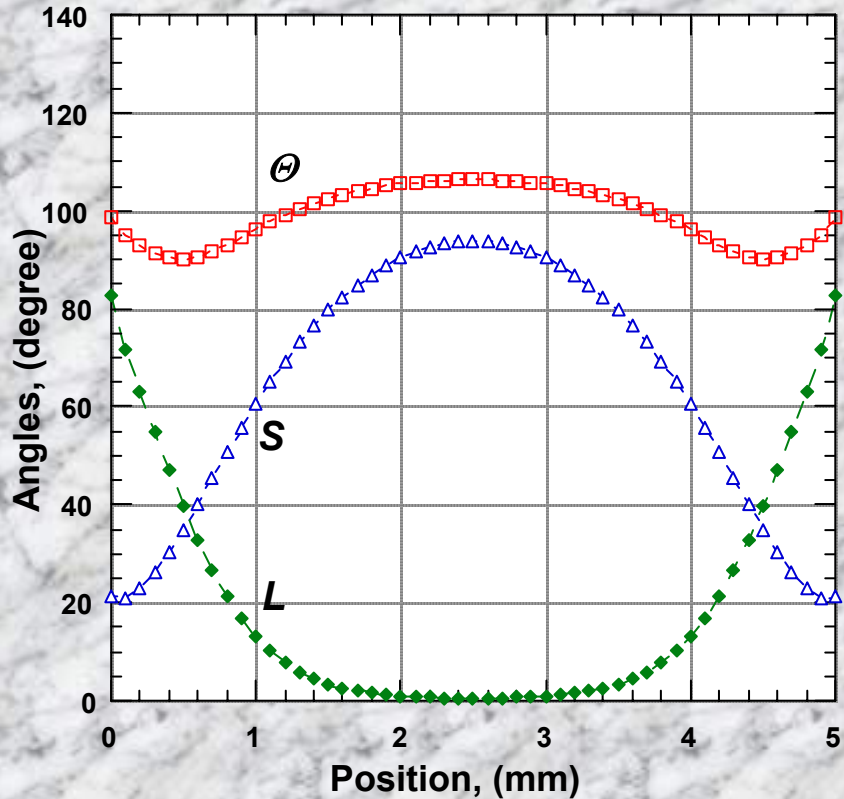
Voislav Golo. Calculations in CRTBT-CNRS to be published



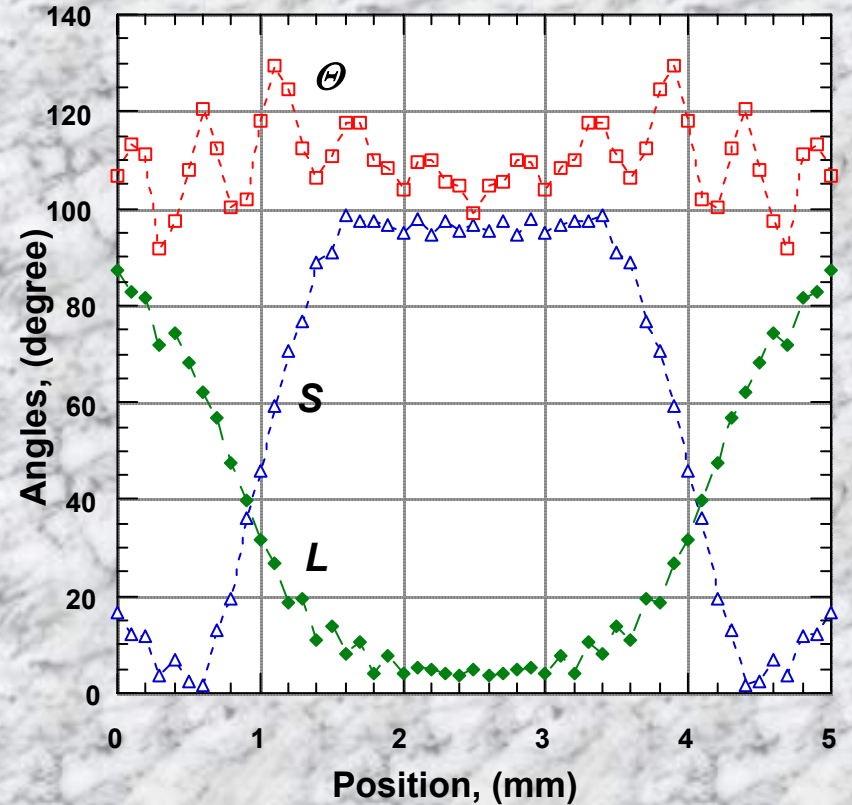
Angles of deflection of order parameter

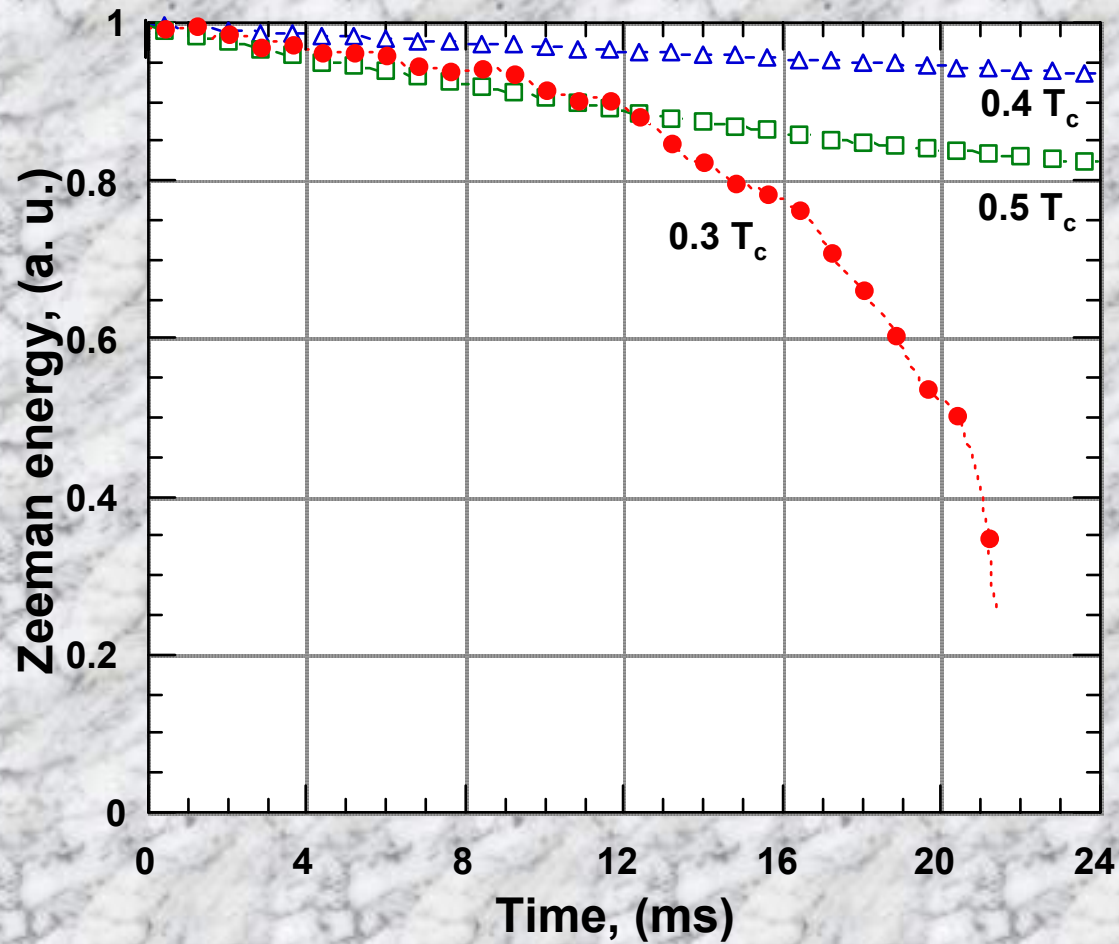
Yu.M. Bunkov, V.L. Golo, O.D. Timofeevskaya, LT 21

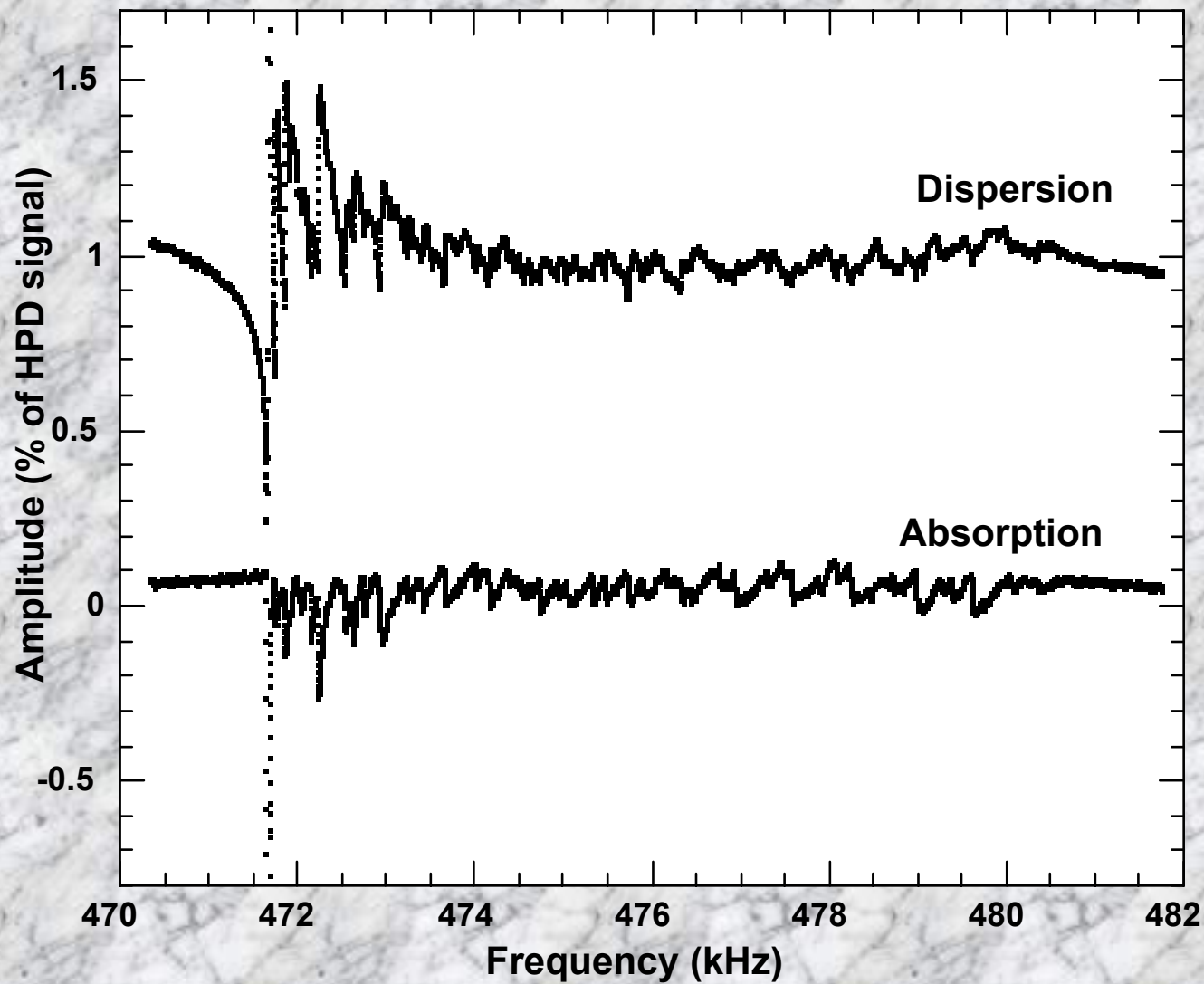
0.5 Tc

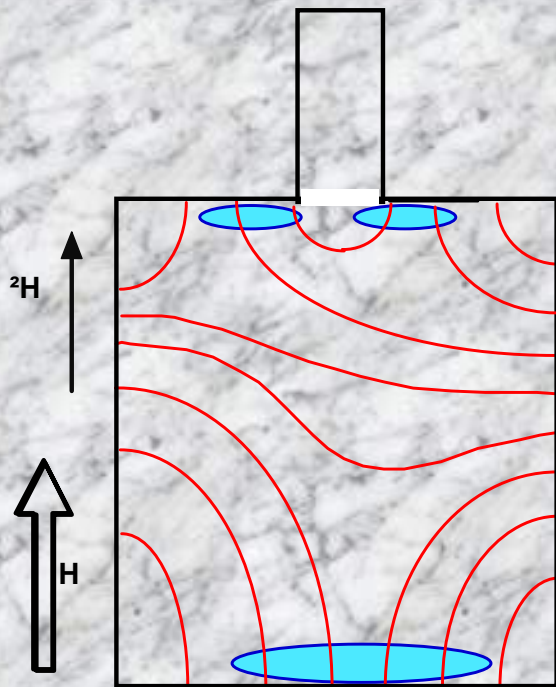


0.3 Tc

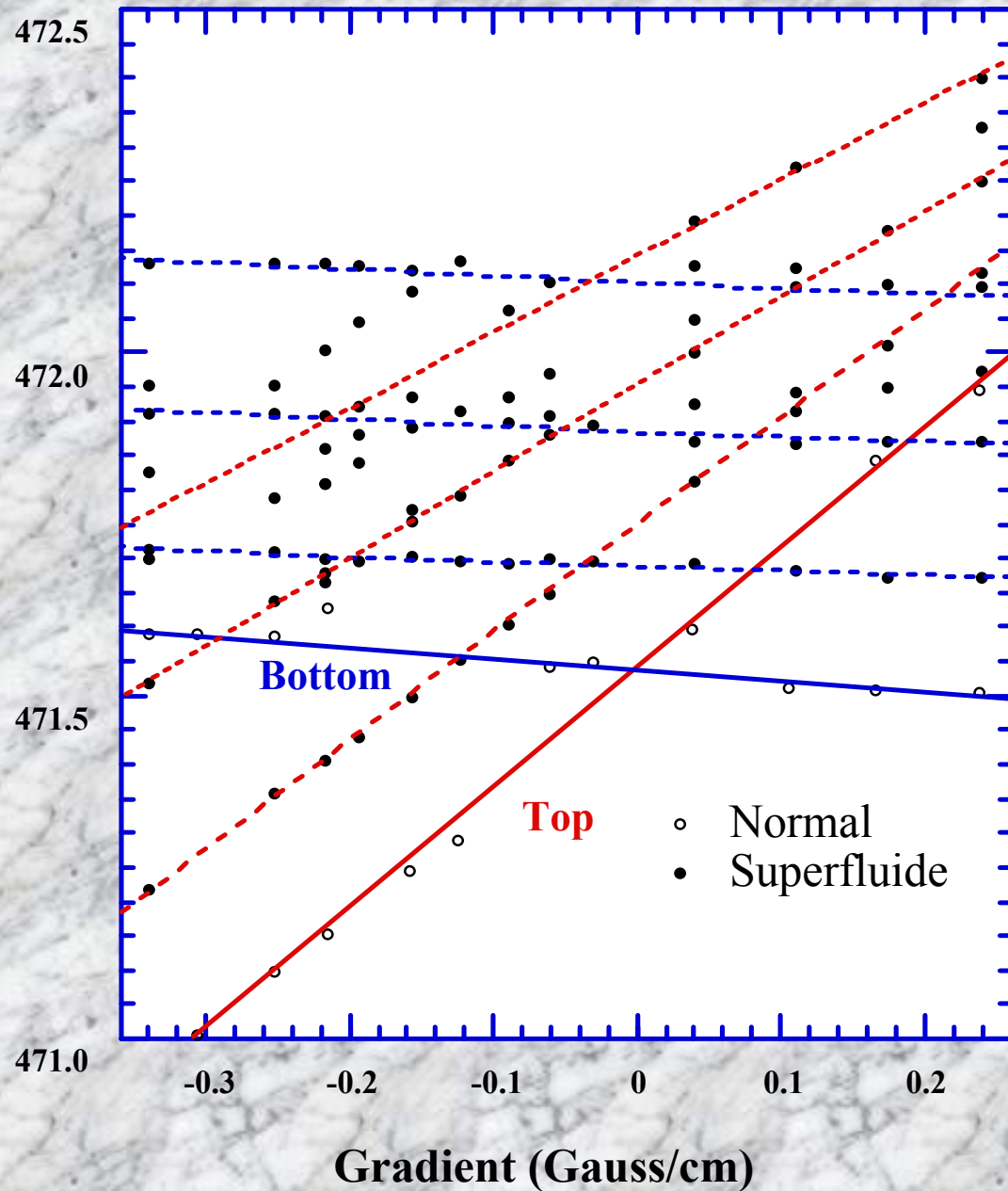


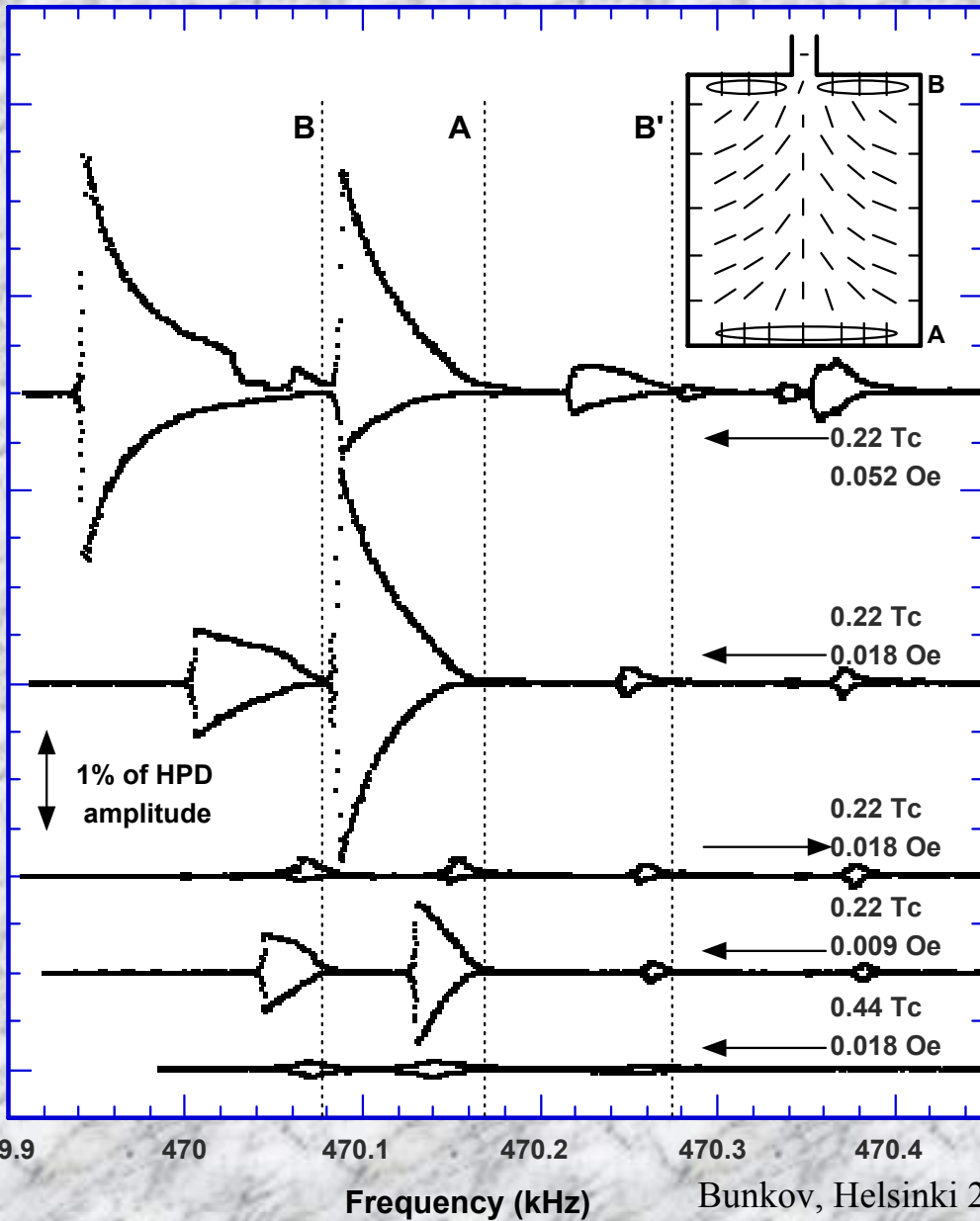


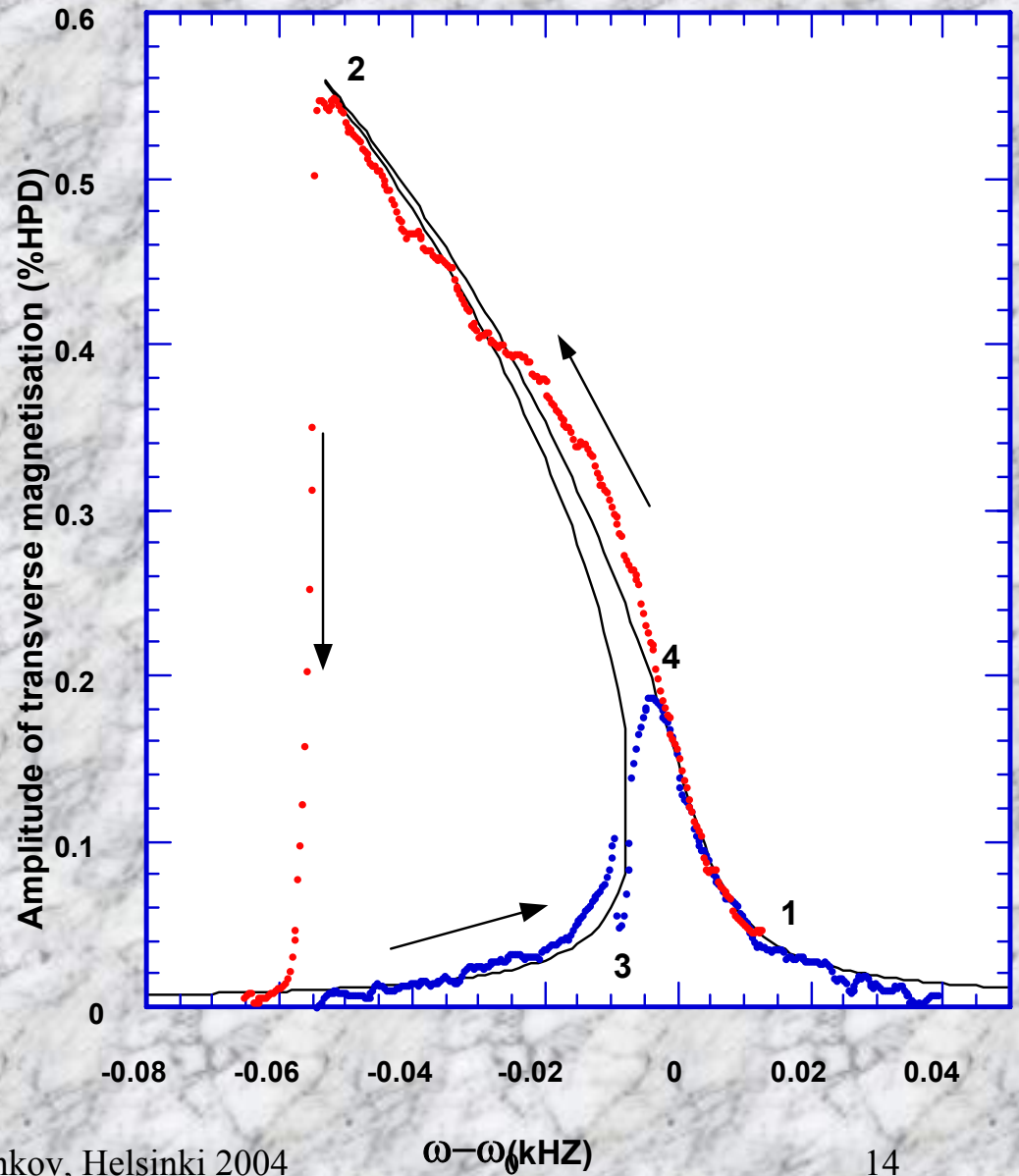
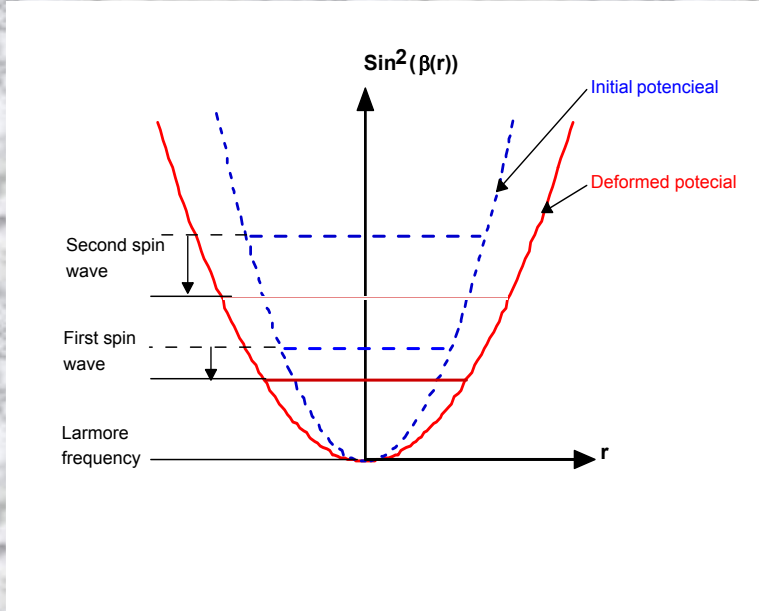


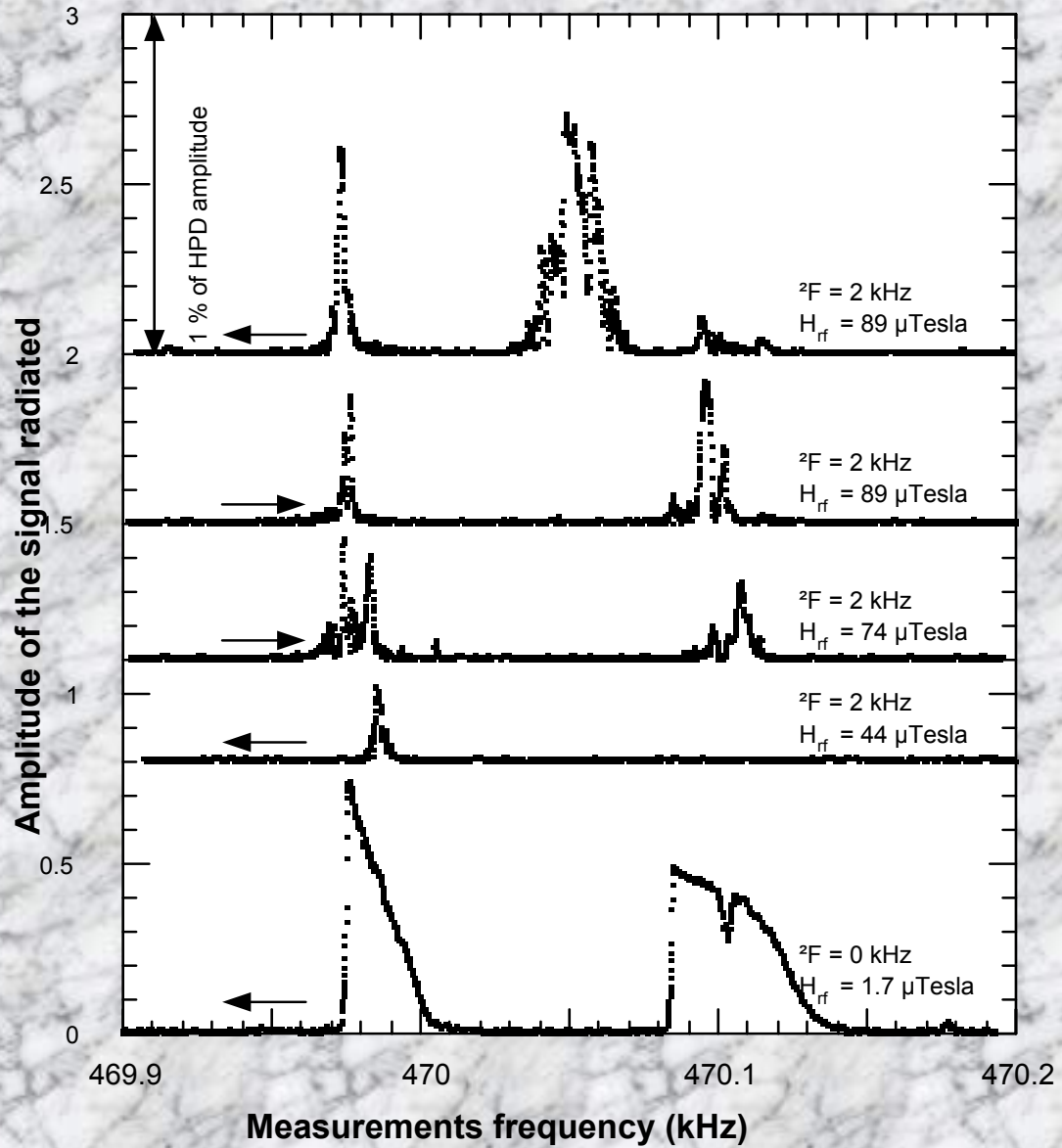


Frequency (kHz)









Fils vibrants de silicium

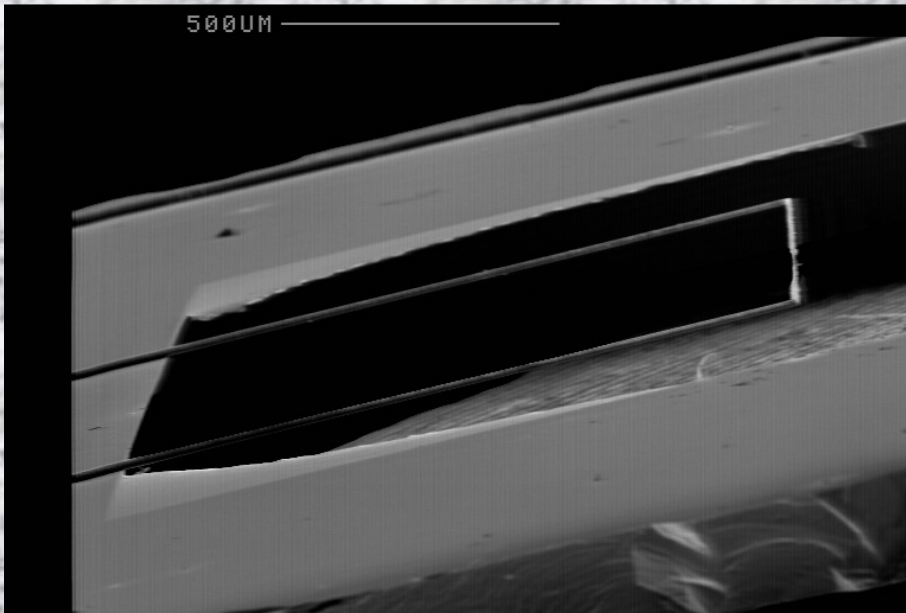
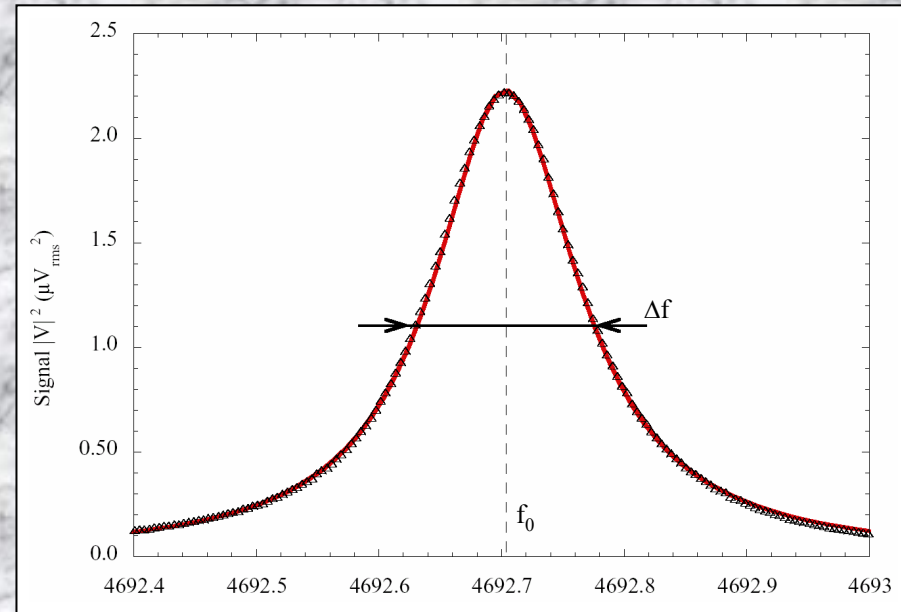


Image MEB
10 μm d'épaisseur, 3 mm de large
0,45 μg



Résonance à vide à 4,2 K
linéaire,
facteur de qualité $3 \cdot 10^4$

Projet MaChE3

^3He en détecteur de particules cosmiques
CRTBT/ISN

