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welcome to the European Microkelvin Collaboration

CAPACITIES

MICROKELVIN Transnational Access Project Report

1. General information

Project number:	**AALTO 43**	
Project Title:	**Self-localization of magnon Bose-Einstein condensates**	
Lead scientist:[1]	**Title:**	Professor
	First name:	Yury
	Last name:	Bunkov
	Home institution:	Institute Neél, CNRS, Grenoble, France
Host scientist:[2]	**Title:**	Professor
	First name:	Matti
	Last name:	Krusius
	Home institution:	Low Temperature Laboratory, Aalto University
Project scientist:[3]	**Title:**	Professor
	First name:	Yury
	Last name:	Bunkov
	Birth date:	29/08/1950
	Passport number:	08AA26721
	Research status/Position:	Director de reserch
	New User:[4]	No
	Scientific Field:	Quantum Physics at Ultra Low Temperatures
	Home institution:	Weizmann Institute of Science, Rehovot, Israel
	Is your home institution MICROKELVIN partner?	Yes
	Business address:	Institut Néel
	Street:	25 Av. Des Martyrs
	PO Box:	
	City:	Grenoble
	Zip/Postal Code:	38042
	Country:	France
	Telephone:	+33 476881252
	Fax:	
	E-mail:	Yuriy.bunkov@grenoble.cnrs.fr

[1] The lead scientist indicated here is expected to participate in the campaign as a user of the infrastructure.

[2] The host scientist is supervising the work of the visiting project scientist at the infrastructure.

[3] The project scientist is the person who will be visiting the infrastructure.

[4] Indicate 'Yes' only if the user has never visited the infrastructure before this specific project, otherwise write 'No'.

2. Project information

Please, give a brief description of project objectives: (250 words max)	During the past years the phenomenon of Spin Supercurrent has been redressed in the language of Bose-Einstein condensation, which has created new understanding on how to explore these coherent resonance modes further. Recent experiments in Aalto University have been measuring the relaxation properties of the low-temperature coherent magnon modes. The relaxation has been found to display strong dependence on the magnon density in the magnetic trap. The purpose of my visit was to understand the enhanced relaxation at high magnon density.
Technical description of work performed: (250 words max)	In particular, my goal is to explore whether the relaxation of the excited BEC states can be explained in part in terms of oscillations in the angle θ which fixes the minimization of the spin-orbit coupling in superfluid 3He-B. If this turns out to be the case, the result would mean a reworking of the current version of my monograph "Spin superfluidity and magnon Bose-Einstein condensation", which is in its final phases of writing and which describes the recent achievements in Q-ball physics within the Microkelvin project.
Project achievements (and difficulties encountered)[5]: (250 words max)	I have formulated the new explanation of the magnon-condensate relaxation as radiation of a new type of excitations, the θ waves. I plan to demonstrate with computer simulations the existence of this relaxation phenomenon. A research report on this effect is also in planning stages.
Expected publications and dates:	A publication about the new mechanism of additional Q-ball relaxation will be submitted for publication shortly.
Submission date of user group questionnaire:	16 Sep, 2013

Completed Project Reports should be returned to MICROKELVIN Management Office (Sari.Laitila@aalto.fi, Fax: +358 9 47022969).

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CERTIFICATION OF VISIT
at MICROKELVIN Transnational Access Site

I herewith confirm that the following project was carried out at our Transnational Access Site

(Name of the Site) OV LOUNASMAA LABORATORY, AALTO UNIVERSITY

in the context of MICROKELVIN Transnational Access:

(Name of the Project). SELF-LOCALIZATION OF MAGNON BOSE-EINSTEIN CONDENSATES

The amount of access[1] delivered to the project group (project users) is as follows: AALTO 43

	Participant name	Duration of stay (start – end date)	Amount of access[2]
Project leader:	Yury Bunkov	4.09.13 – 9.09.13	6
Project user 1:	Yury Bunkov	4.09.13 – 9.09.13	6
Project user 2:			
Project user …:[3]			
Total amount of access delivered to project group:			**6**

Helsinki, Finland 9.09.2013
Location and date

Matti Krusius
Signature of access provider
M. Krusius

Helsinki, Finland 9.09.2013
Location and date

Signature of project leader
Yu. Bunkov

Completed Certification of Visit should be returned to MICROKELVIN Management Office
(sari.laitila@aalto.fi, fax: +358 9 47022969

[1] TKK Helsinki, CNRS Crenoble, or Lancaster University

[2] The amount of access is defined as the time, in days, spent by the user at the infrastructure for this project, including weekends and public holidays (e.g., a scientist who spent 5 days at the infrastructure must indicate '5'). The total amount of access of the project group is the sum of access days of each project user.

[3] Please, expan