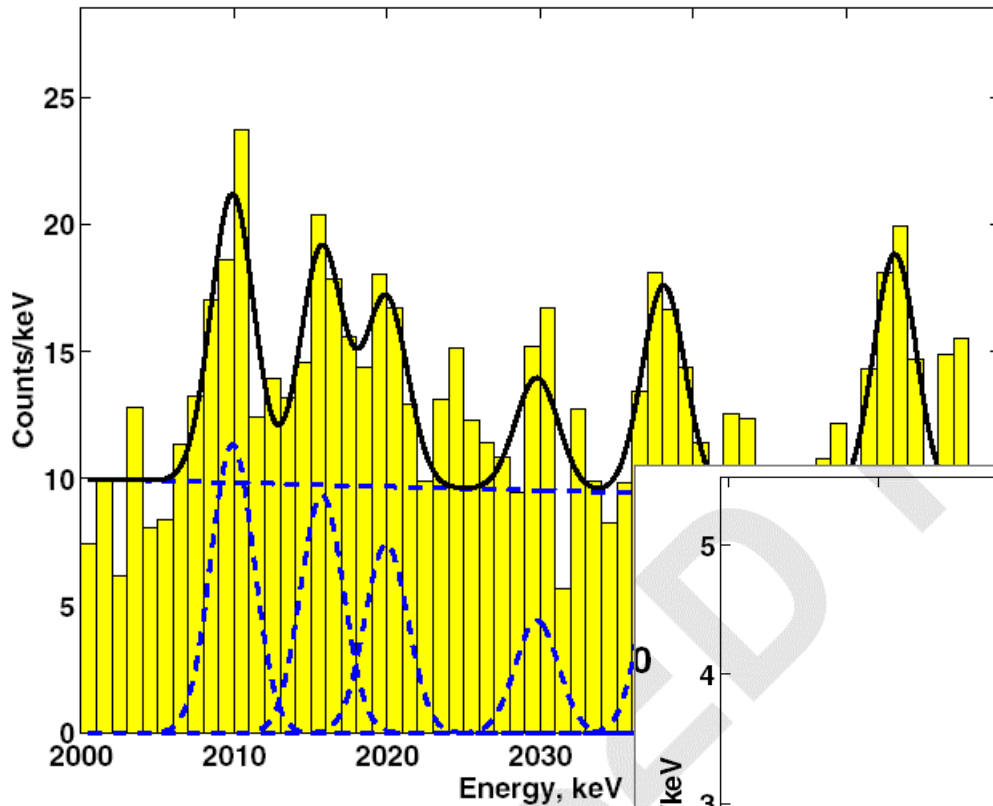


# A new $^{76}\text{Ge}$ Double-Beta Experiment

- Ge in liquid nitrogen discussed first by Heusser
- GENIUS proposal by Klapdor-Kleingrothaus et al.
- Generally recognised as a good idea
- Ge in liquid nitrogen experiment listed as one of the key future projects of MPIK in MPG 2000+
- ... but failed to materialise ...

About a year ago, some of us thought that one should revive this concept ...

- getting rid of historical ballast
- critically reviewing the setup and the performance
- proposing a realistic, staged implementation

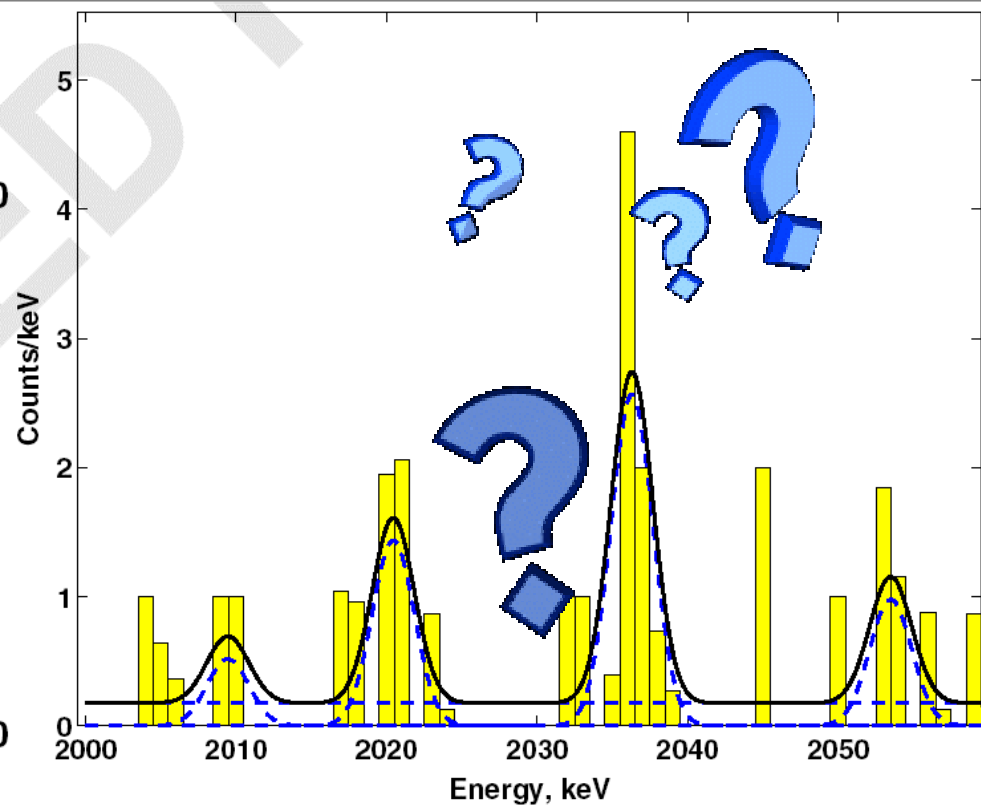


**NUCLEAR  
INSTRUMENTS  
& METHODS  
IN PHYSICS  
RESEARCH**  
Section A

[www.elsevier.com/locate/nima](http://www.elsevier.com/locate/nima)

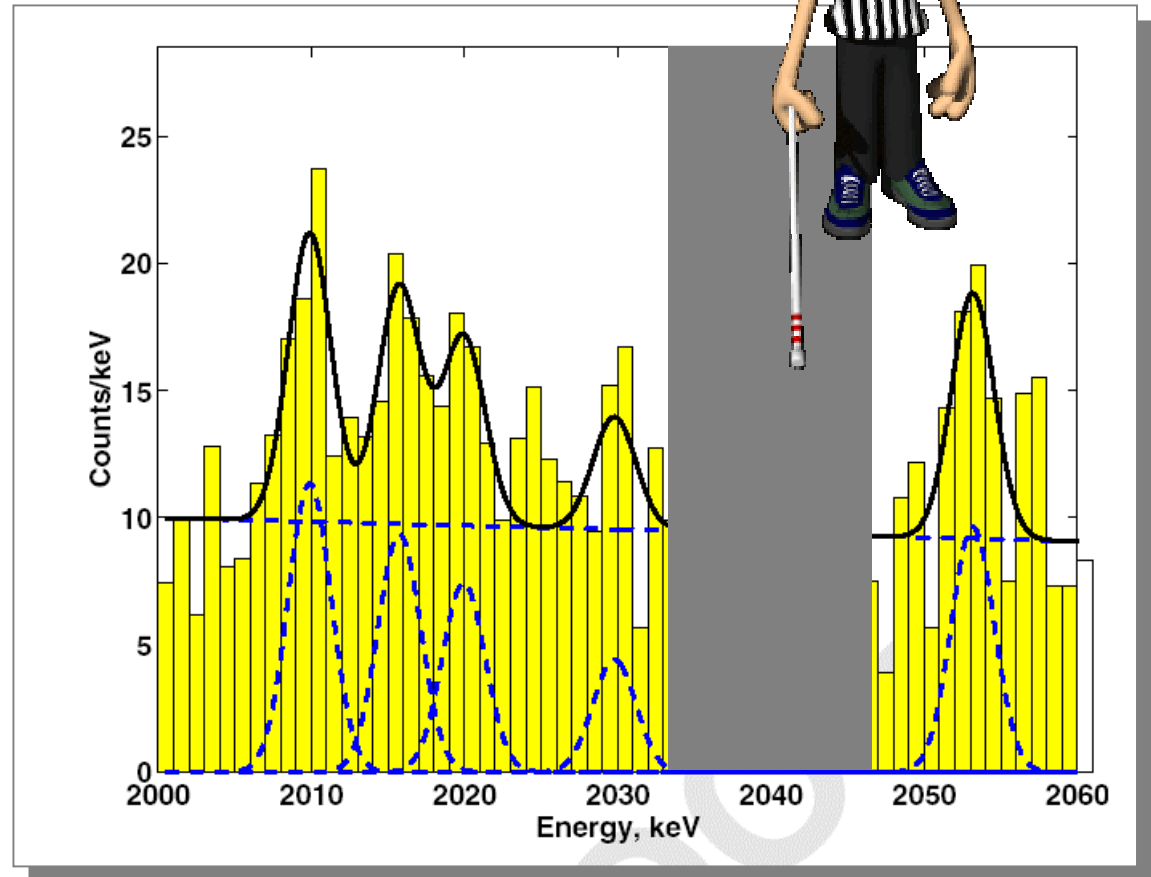
**Abstract**

Data acquisition in a long-running underground experiment, stability of the experiment HEIDELBERG-MOSCOW experiment, and the analysis of the data are presented for 71.7 kg year. The background achieved is 0.11 events/kg year keV. The two-neutrino mass is 0.1 eV. Also, the confidence level for the neutrino mass is 0.1. © 2003 Elsevier B.V. All rights reserved.



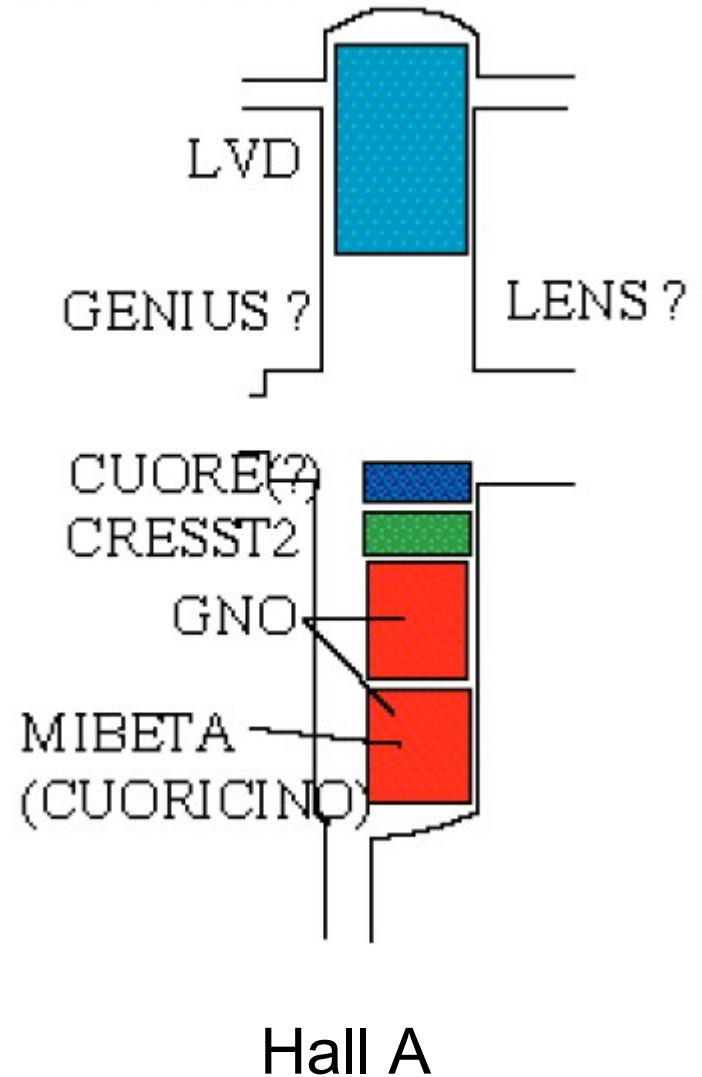
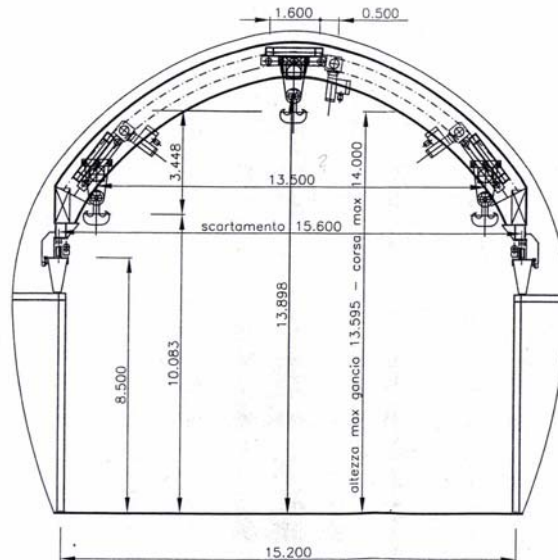
# State of the art in particle physics: blind analysis

- blind signal region
- calibrate, develop cuts, background model
- freeze all parameters, cuts, background
- look at signal region



# A new experiment at LNGS

- LNGS with its infrastructure and experience allows fast progress
- Synergies with BOREXINO, CTF, LENS-TF, ...
- Space is (more or less) available
- But imposes constraints on tank layout



# Phases of the experiment

Phase I:  
a fast start



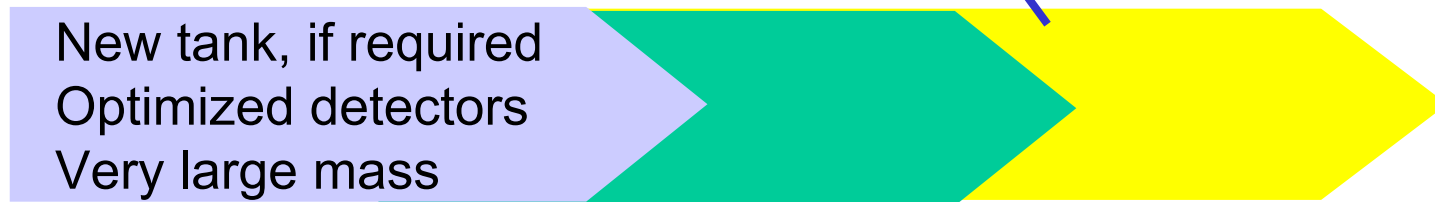
Phase II:  
serious physics reach



Low-level production,  
Segmentation,  
...

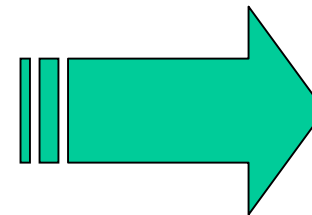
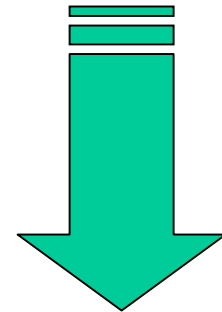
Physics beyond DBD ?

Phase III:  
the ultimate experiment



## Relation to Majorana

- Most likely only one large Ge experiment worldwide
- Very good contacts with Majorana; Majorana members will very likely participate in proposal to LNGS
- Consensus to adopt whatever shielding scheme provides best performance, after R&D phase



**Common  
approach to  
large Ge DBD  
Experiment**

# Goals of the meeting & near future

- Review and discuss status & ideas
- Converge towards a Letter of Intent to LNGS

(more or less requested by LNGS)

- List of interested parties, contact person
- Reasonably detailed description of experiment
- “Who is interested in what” list
- Requests to LNGS
- Discussion of safety and environmental issues
- Probably no statement about funding

Deadline March 15 !

- Try to obtain conditional approval by LNGS

# Funding

- Estimated cost of phase I: (3+ M€ +  $^{76}\text{Ge}$  Detectors)
- A bargain ...
- But nevertheless a big worry
- Sources of funding
  - MPG
    - MPIK
    - MPI Physik
    - Central funds (possible for approved pro
  - BMBF Verbundforschung
    - next round starts only 4/05
    - reduced funding level for Verbundforsch
    - no funding for MPG institutes
  - INFN (*Gallium?*)
  - ?





# Schedule (my view)

	2004				2005			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<b>LOI</b>	■							
<b>Proposal</b>			■					
<b>Tank</b>								
Review, optimise, fix design		■	■	■				
Procurement				■				
Construction					■	■	■	
Installation							■	
Cryo commissioning								■
<b>Detectors</b>								
R&D (contacts etc.)	■	■	■	■				
Modify / adapt				■				
Test						■	■	

go ahead;  
funding for  
1st phase  
secure



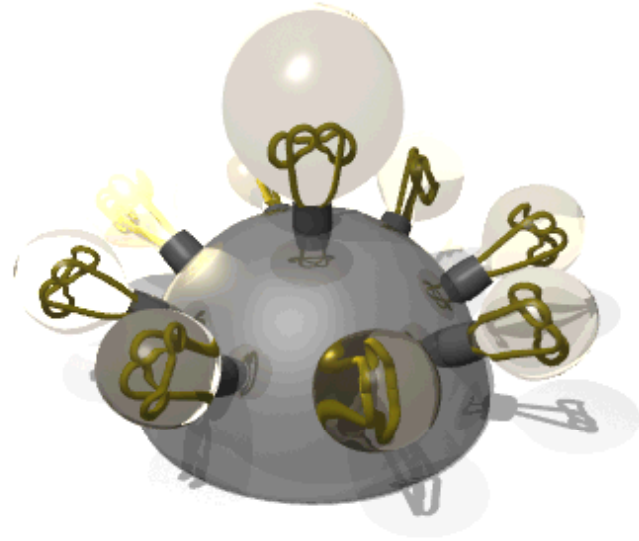
**Difficult task:  
A name for the experiment**



**Gelini**

**Gesine**  
Gesine

# Technical matters



- Lunch: Institute canteen
- Workshop dinner: also at the institute
- Travel organisation, help: Mrs. Crespo (Mornings)
- Per diem: trade money against signatures
- Internet access: ask us, PCs nearby
- Other questions, problems: let us know