



Herzlich Willkommen in HAvSE 2011!



Hamburg/DESY site, July 19 -23, 2011



HANvSE 2011

Hamburg Neutrinos from Supernova Explosions

DESY, Hamburg Site/Germany
19-23 July 2011

Topics

Core collapse simulations

Microphysics of supernova core

Stellar nucleosynthesis

Neutrino flavor conversions

Exotic particles emission

Neutrino detection strategies

Organizing committee

Sovan Chakraborty
Caren Hagner
Alessandro Mirizzi (chair)
Pasquale Dario Serpico
Günter Sigl
Ricard Tomàs Bayo

Program committee

Chris Cardall
Amol Dighe
Eligio Lisi
Gail McLaughlin
Kate Scholberg
Michael Wurm



Particles, Strings,
and the Early Universe
Collaborative Research Center SFB 676



<http://hanse2011.desy.de>

HANSE

Economic alliance trading cities and their merchant guilds that dominated trade along the coast of Northern Europe during the late Middle Ages and early Modern epoch.



Foundation of the alliance between Lübeck and Hamburg (circa 1241).
Precursor of the Hanseatic League.

WHY HANSE ?

HANSE (*hansa*, althochdeutch): group, crowd, retinue.

Good auspice for our workshop !

We hope it would stimulate the growth a new "*league*" among **astrophysicists** and **particle physicists** to develop a **synergic** approach in the study of

Supernova Neutrinos



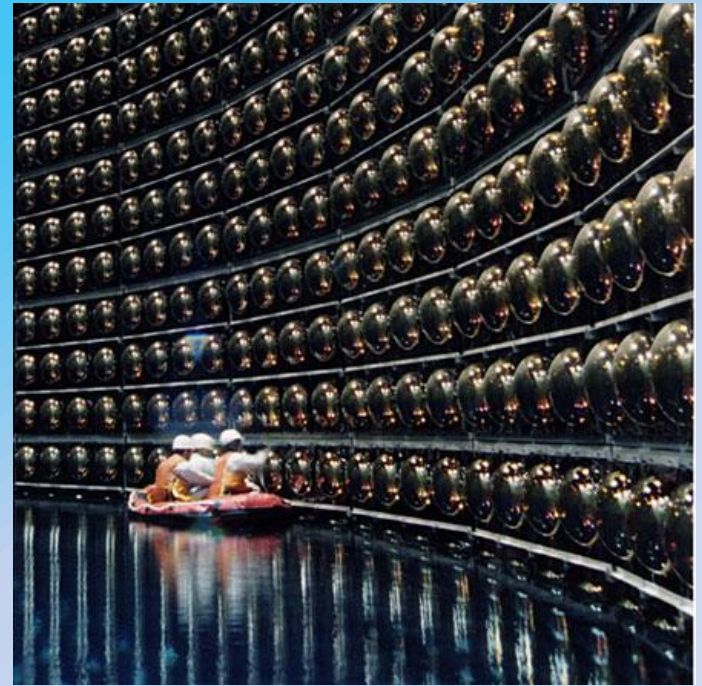
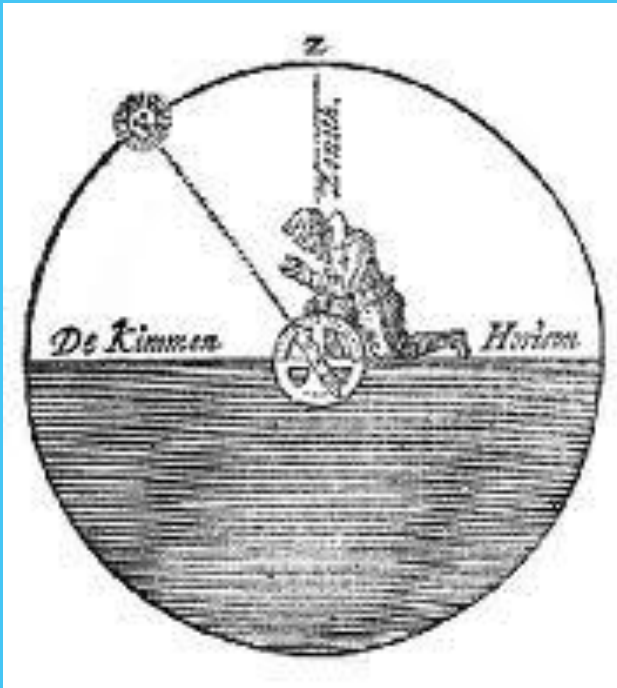
HANSE also reminds mariners, pirates, ships...



and...Stars

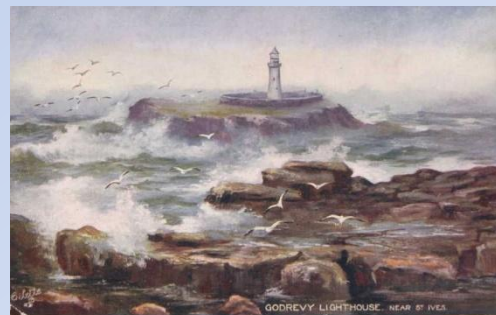


The **Mariner's Astrolabe** to determine the latitude of a ship at sea by measuring the noon altitude of the Sun or the meridian altitude of a **star** of known declination

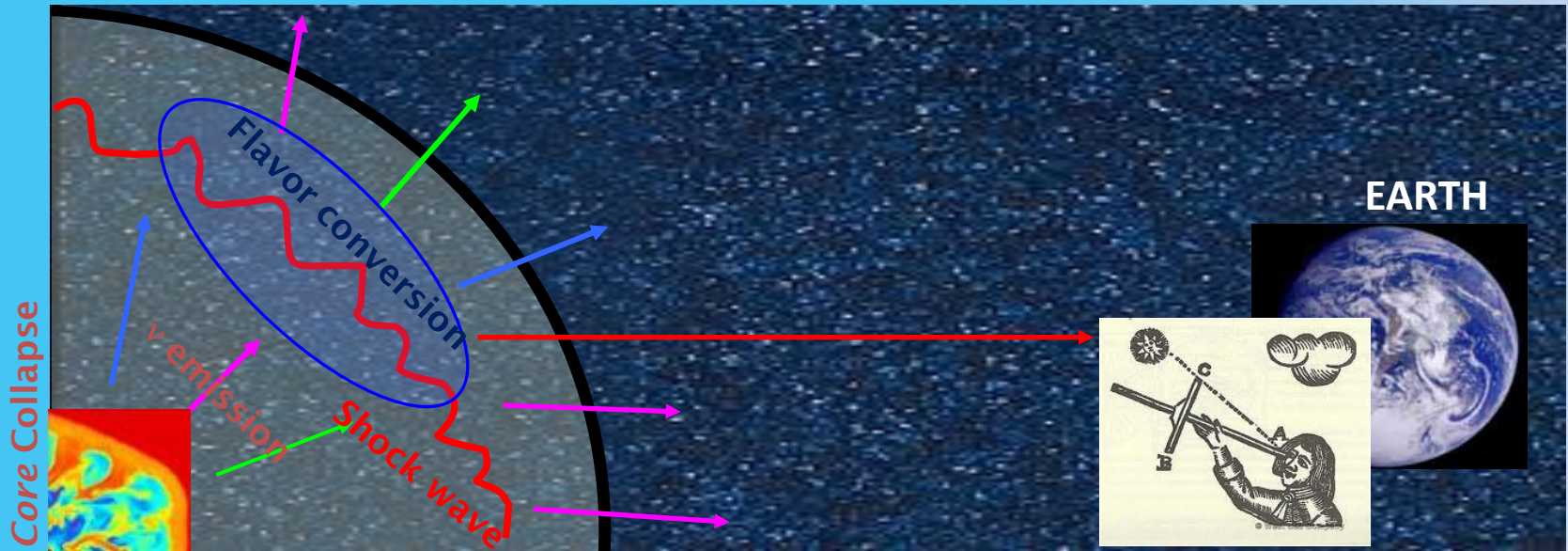


Supernova neutrino detectors as **astrolabe** to guide the navigation in the open sea of

ASTROPARTICLE PHYSICS



SUPERNOVA NEUTRINOS



Production (flavor)

Propagation (mass, mixing)

Detection (flavor)

$$| \langle \psi_i |$$

$$\int \exp(-iHt)$$

$$| \psi_f \rangle |$$

- Core-collapse simulation
- Microphysics of SN core
- Stellar nucleosynthesis
- Exotic particles emission

- Flavor conversions
- Matter effects: shock wave, turbulences
- Dense neutrino bkg
- New interactions
- Decays

- Interaction cross sections
- Different detection strategies
- Observable signatures

Our rise around the world of SN neutrinos...

AROUND THE WORLD
▲ 110 DAYS ▲
S.S. VICTORIA LUISE

FROM NEW YORK NOV. 12, 1912

FROM SAN FRANCISCO FEB. 27, 1913

BOOK NOW

\$650
WORTH UP
INCLUDING ALL
NECESSARY
FURNITURE AND
BOARD

HAMBURG AMERICAN LINE
41-43 BROADWAY N.Y.

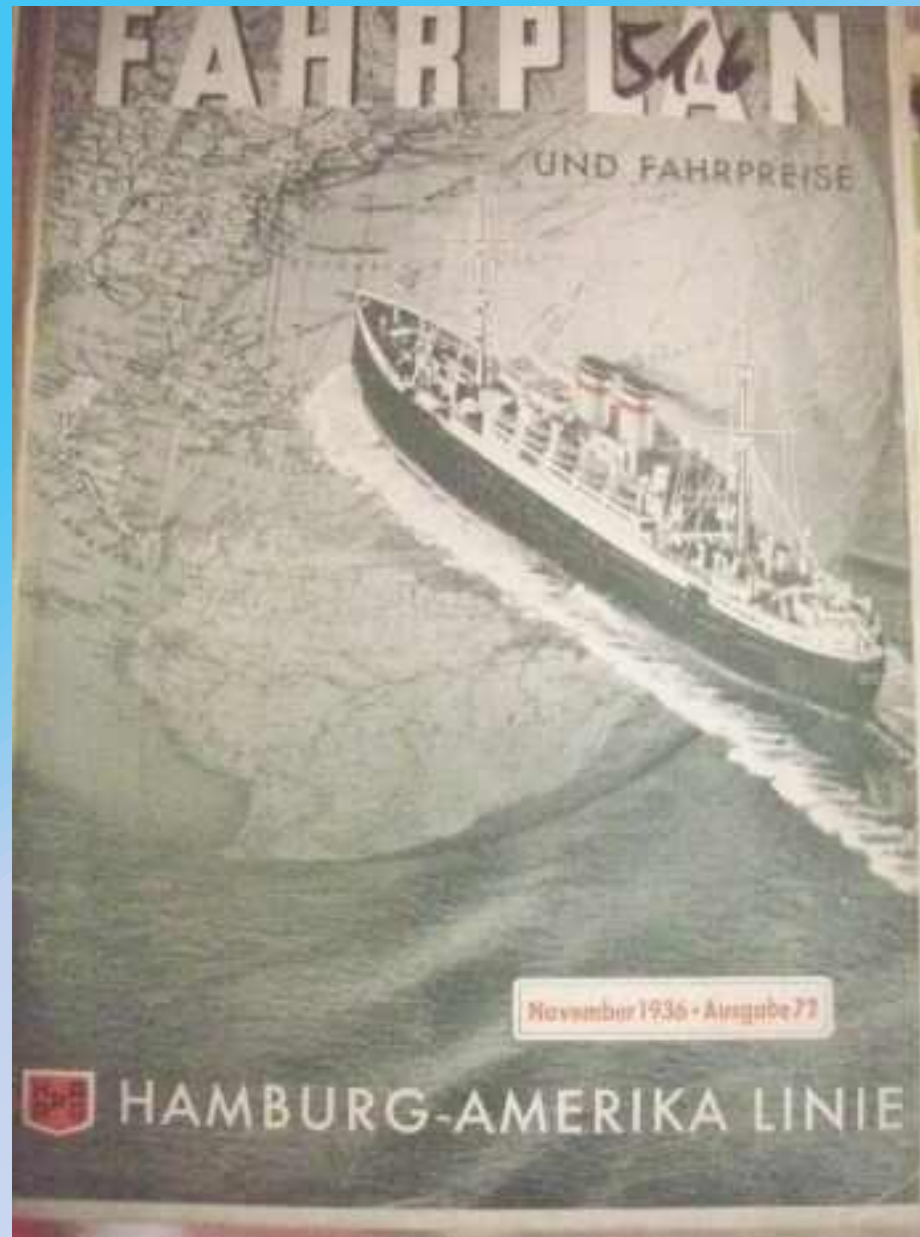
BOSTON PHILADELPHIA PITTSBURGH CHICAGO ST. LOUIS SAN FRANCISCO

The advertisement features a central illustration of a white steamship with three funnels, sailing on a dark sea. Behind the ship is a large, glowing globe of the Earth. Three white, glowing rings or paths of light swirl around the globe, suggesting a global journey. The background is a gradient of yellow and orange, suggesting a sunset or sunrise.

...In three days



OUR RISE PLAN



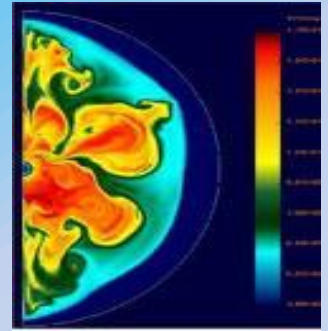
1st DAY ASTROPHYSICS SESSION

Conveners



Christian Cardall

Gail McLaughlin



TALKS

- *Neutrinos and core-collapse supernovae* Stephen Bruenn
- *Modeling core-collapse supernovae: an Overview and Status Report* Christian Ott
- *Multi-dimensional core-collapse supernova simulations with VERTEX* Bernhard Müller
- *Neutrino oscillations and supernova nucleosynthesis* Rebecca Surman
- + *specialized talks* by Almudena Arcones, Gang Shen, Tina Lund

2nd DAY

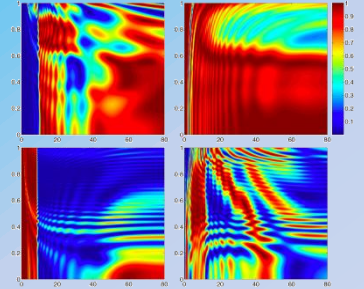
PARTICLE PHYSICS SESSION

Conveners



Amol Dighe

Eligio Lisi



TALKS

- *Microphysics of Supernova Core* Matthias Liebendörfer
- *Supernovae as laboratories for particle physics* Georg Raffelt
- *SN neutrino flavor evolution at high density* Baha Balantekin
- + *specialized talks* by Shun Zhou, Irene Tamborra, Daavid Vaananen, Jim Kneller, Raymond Sawyer, Alessandro Mirizzi

3rd DAY PHENOMENOLOGY AND DETECTION SESSION



Conveners



Kate Scholberg

Michael Wurm

TALKS

- *Signatures of SN neutrino oscillations* Amol Dighe
- *Low-energy neutrino-nucleus interactions* Nathalie Jachowicz
- *Supernova neutrinos detection technologies* Clarens Virtue
- + *specialized talks* by Makodo Sakuda, Gösta Kroll, Vladimir Kulikovskiy, Aldo Ianni, Walter Fulgione, Georgios Tsiledakis

FINALLY WE WILL REACH THE HARBOUR!



SUMMARY SESSION

TALKS

- *Summary of Astrophysics Session* Chris Cardall/Gail Mclaughlin
- *Summary of Particle Session* Amol Dighe/Eligio Lisi
- *Summary of Pheno/Detection Session* Kate Scholberg/Michael Wurm

Last burden on the conveners' shoulders !



CONCLUDING TALK BY MARK VAGINS

"Neutrino Forecast: Mostly Sunny, with a Good Chance of Supernovas"



PUBLIC LECTURE TONIGHT BY THOMAS JANKA

"Rätselhafte Supernovae - den Geheimnissen der größten kosmischen Explosionen auf der Spur"

WISSENS WERTE.

Öffentlicher Abendvortrag im Rahmen der HAvSE 2011



**Rätselhafte Supernovae –
den Geheimnissen der größten
kosmischen Explosionen auf der Spur**

Dr. Hans-Thomas Janka
Max-Planck-Institut für Astrophysik, Garching

Mi., 20. Juli 2011, 19.00 Uhr

DESY-Hörsaal, Eintritt frei
Notkestraße 85, 22607 Hamburg

Bereits im Altertum und bis zu den Anfängen der neuzeitlichen Astronomie galten "neue Sterne" oder "Gaststerne" am sonst so unveränderlich erscheinenden Himmelsgewölbe als besonderes Zeichen göttlichen Wohlwollens. Heute wissen wir, dass die als Supernovae bekannten Sternexplosionen zu den gewaltigsten und hellsten kosmischen Erscheinungen zählen, ohne die weder die Erde noch indisches Leben entstanden wären. Mit aufwändigen Computermodellen und den empfindlichsten, je von Menschen gebauten Messinstrumenten schicken sich Astrophysiker und Teilchenphysiker an, die Vorgänge im Innern der sterbenden Sterne zu enträtseln.

Weitere Information: <http://www.desy.de/fortbildung/>
<http://hansc2011.desy.de/>



Beschleuniger | Forschung mit Photonen | Teilchenphysik

Deutsches Elektronen-Synchrotron
Ein Forschungszentrum der Helmholtz-Gemeinschaft



TWILIGHT TOUR ON THURSDAY

Boat trip on the Alster and its canals



There is plenty to discover on and around the Alster. You can experience all the charm of the Alster with the lovely Alsterpark, the villas and sailing boats set against the panorama background of towers and church spires.

SOCIAL DINNER ON FRIDAY



Övelgönne: picturesque district with old captains' and ship-pilots' houses on the banks the Elbe. Wonderful old ships in the Övelgönne Museum.

EXCURSION TO LÜBECK ON SATURDAY



Lübeck : medieval picturesque town is characterised by cultural sights which symbolize the great past of free Hanseatic City. Parts of the historic Old Town were added to the list of World Heritage by UNESCO in December of 1987.

A nighttime photograph of Hamburg, Germany, featuring the illuminated spire of the Hamburg City Hall (Rathaus) in the foreground. The harbor is visible in the background, with several ships and cranes. The sky is filled with colorful fireworks in shades of pink, purple, green, and white. The overall scene is festive and celebratory.

**We hope you will enjoy
our Workshop...**

and...

Have fun in Hamburg!