

Workshop on Numerical Simulation of Mantle Convection

Neustadt-an-der-Weinstrasse, June 12-14, 1987

Second circular

Dear colleague,

the response to our first circular was positive and we expect about 25-30 participants. The workshop will take place from Friday to Sunday, June 12-14, at the Herz-Jesu-Kloster (Holy Heart Monastery) at Neustadt an der Weinstrasse, a scenic little town about 100 km south-west of Frankfurt. Lodging at the monastery is 40 DM per night for full board. Those who want to give a presentation are asked to send a title plus some keywords to one of the organizers until March, 20. Abstracts are not necessary. The sessions will take place in a round-table fashion with (hopefully) lots of discussions. Therefore be prepared to speak only for about half of the scheduled time (approx. 45-60 min) and to be interrupted at any time for questions or brief discussion. It is not necessary that every participant gives a formal talk, but everybody is expected to take an active part in the discussions.

Preliminary program:

First day, morning: Survey of numerical methods for convection.

Participants will be asked to explain their method for about 15 min.

afternoon 1: Fluid dynamical results (comprises results which are not meant as direct simulations of geological/geophysical processes. For example: 3-D convection, compressible convection, nonlinear dynamics of convection,...).

afternoon 2: Working group on the 'benchmark problems'.

Second day, morning: Fluid dynamical results (continuation).

afternoon: excursion.

Third day, morning: Geophysical/Geological Models (e.g. plumes, lithospheric thinning, single-vs-two-layer convection, gravity signal).

afternoon 1: Geophysical/Geological models (continuation)

afternoon 2: General discussion

A third circular with detailed information for travel, available travel grants, etc., will be distributed until April, 1, 1987 among those who have responded to the first or second circular. Final registration is necessary until May, 5, 1987.

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PRELIMINARY PROGRAM

THURSDAY JUNE, 11

- 19.00 - DINNER
- 20.00 - WELCOME PARTY (IN THE CELLAR BAR)

FRIDAY JUNE, 12

- 9.00 - JARVIS: ON NUSSELT NUMBERS AND THE RELATIVE RESOLUTION OF PLUMES AND BOUNDARY LAYERS
- 9.45 - MOORE: EFFICIENT REAL FAST FOURIER TRANSFORMS FOR ELLIPTIC SOLVERS AND SPECTRAL CODES
- 10.30 - BREAK
- 11.00 - HANSEN: FE SIMULATIONS OF TIME DEPENDENT CONVECTION
- 11.45 - GURNIS: FE SOLUTION OF STOKES FLOW IN A HYPER-CUBE COMPUTER
- 12.30 - LUNCH
- 13.45 - BUSSE: 3-D CONVECTION IN PLANE LAYERS AND SPHERICAL SHELLS
- 14.30 - CSEREPES: 3-D CONVECTION IN A SINGLE OR DOUBLE LAYER MANTLE
- 15.15 - MACHETEL: ...
- 16.00 - COFFEE
- 16.45 - BENCHMARK SESSION
- 18.45 - DINNER

SATURDAY, JUNE 13

- 9.00 - SPOHN: NON-LINEAR EFFECTS ON THE MANTLE ADIABAT AND IMPLICATIONS FOR MANTLE CONVECTION
- 9.45 - STEINBACH: FE SIMULATION OF COMPRESSIBLE CONVECTION
- 10.30 - BREAK
- 11.00 - QUARENI: MEAN-FIELD COMPRESSIBLE CONVECTION IN THE EARTH'S MANTLE
- 11.45 - HARDER: CONVECTION WITH VISCOELASTIC RHEOLOGY
- 12.30 - OPEN (MCKENZIE ?)
- 13.15 - LUNCH
- AFTERNOON FREE - WALK - ABOUT 18.00 WINE-TASTING AND DINNER

SUNDAY, JUNE 14

- 9.00 - KOCH: SURFACE DEFORMATION, GRAVITY & GEOID SIGNALS OVER SINGLE AND DOUBLE LAYER CONVECTIVE SYSTEMS
- 9.45 - RITZERT: ...
- 10.30 - BREAK
- 11.00 - CHRISTENSEN: NUMERICAL TREATMENT OF NON-DIFFUSING COMPOSITIONAL DENSITY DIFFERENCES IN THERMAL CONVECTION
- 11.45 - SCHMELING: NUMERICAL MODELS OF RAYLEIGH-TAYLOR INSTABILITIES SUPERIMPOSED WITH CONVECTION
- 12.30 - LUNCH
- 13.45 - OLSON: NUMERICAL EXPERIMENTS ON THE PLUME FORMATION IN THE D" LAYER AND THE ROUGHNESS OF THE CORE-MANTLE BOUNDARY
- 14.30 - WOLTERS: EFFECTS OF LITHOSPHERE/ASTHENOSPHERE FLOW INTERACTION
- 15.15 - FLEITOUT: HOT SPOTS: A VIEW OF THIS CONVECTIVE PHENOMENON !!! FROM AN ANALYSIS OF OCEAN TOPOGRAPHY AND GEOID
- 16.00 - COFFEE
- 16.45 - GENERAL DISCUSSION OR AD-HOC SESSION

Workshop on the Numerical Simulation of Mantle Convection

Neustadt an der Weinstrasse, June 11-14, 1987

Third Circular, March 1987

Site & Accommodation

Neustadt an der Weinstrasse (about 15000 inhabitants) is located at the western edge of the Rhinegraben between vineyards and wooded hills, about 30 km west of Mannheim or 100 km south of Frankfurt. The site of the meeting is about 2 km from the center of the town (and 100 m above).

Address:

Herz-Jesu-Kloster, Waldstrasse 145,
D-6730 Neustadt/Weinstrasse, Tel.: (0)6321-89060

The price is 40 DM per person per day including four meals. There are both double and single rooms with shared bathrooms. The rate is the same, but not all participants can be accommodated in single rooms. The monastery has a cellar bar. Reservation is made from Thursday afternoon (6/11) to Monday morning (6/15), it is not possible to stay at the monastery before or after. If you want us to make any other hotel reservations for you, please specify your wishes. Please indicate if there will be accompanying persons.

Travel

Those who come by train from the North, East, or South will probably have to change at Mannheim. Trains are running at least every hour from Mannheim to Neustadt. The time table is given below (it will expire June, 1, and minor changes are possible thereafter).

Neustadt			Neustadt			Neustadt			Neustadt		
↘ Mannheim ↗			↘ Mannheim ↗			↘ Mannheim (Forts) ↗			↘ Mannheim (Forts) ↗		
km 31	ab Zug	an	ab Zug	an	ab Zug	an	ab Zug	an	ab Zug	an	
0.25 D	0.52	0.01 D	0.27	13.28	14.01	15.35	16.11				
4.38	5.15	4.29 D	4.56	14.00	14.20	15.41	15.59				
4.38	5.24	5.16	5.58	14.09	14.43	16.00	16.34				
5.27	6.05	5.56	6.38	14.09	14.52	16.19 E	16.51				
5.50	6.33	6.27 E	7.00	14.54 D	15.20	16.41 D	17.03				
8.03	6.50	6.41	7.23	15.10 E	15.39	16.50	17.23				
8.24	7.05	6.58	7.29	15.54 D	16.20	17.11 D	17.33				
8.32	7.15	7.41 D	8.05	16.30 -/E	17.08	17.14	17.52				
8.54 D	7.20	7.47	8.20	16.56 D	17.20	17.36 E	18.00				
7.04	7.26	8.17 E	8.47	17.00	17.32	17.41 D	18.03				
7.07	7.41	8.41	8.59	17.30	18.02	18.12	18.51				
7.20 E	7.52	9.41 D	10.03	17.54 D	18.20	18.40	19.10				
7.32	8.08	10.41 D	11.05	18.23	19.00	18.53 D	19.17				
7.53 D	8.16	11.21 E	11.57	18.41	19.07	19.12	19.46				
8.15 E	8.48	11.41 D	12.03	18.56 D	19.20	19.41 D	20.05				
8.43 E/D	9.20	12.41 D	13.03	19.19	20.06	20.41 D	21.03				
8.56 D	9.20	13.09	13.52	19.54	20.20	21.41 D	22.05				
9.54 D	10.20	13.41 D	14.05	20.26	21.01	21.48	22.19				
10.54 D	11.20	14.06 E	14.36	20.31 D	21.01	22.32	22.53				
11.31 -/E	12.05	14.50 D	15.14	20.54 D	21.20	22.43	23.21				
11.56 D	12.20	14.58 E	15.29	21.26	21.59						
12.28	13.02			22.00	22.20						
12.54 D	13.20			22.43	23.18						

Ⓜ = ① bis ④, nicht 25. XII. bis 1. I., 18. bis 20. N., 2. V.
 Ⓝ = X, nicht 1. XI., 6. I.
 Ⓞ = X außer ④, nicht 24., 31. XII., 6. I.
 Ⓟ = täglich außer ④, auch 1. XI., nicht 24., 31. XII.
 Ⓠ = X, nicht 1. XI., auch 6. I.
 Ⓡ = t, auch 1. XI., nicht 6. I.
 Ⓢ = X außer ④, nicht 24., 31. XII., auch 6. I.
 Ⓣ = ④ und t, auch 24., 31. XII., nicht 6. I.

Coming from the West: There is a direct train from Paris Est to Neustadt.
 Dept.: 9⁰⁰ Arriv.: 13⁵⁹, D: 13⁴² A: 18⁵⁵, D: 17¹⁶ A: 21⁵⁹.