

Enrique Gómez Martín

25ièmes Journées des Actinides

April 7-11 * L'Aquila, Italy

1995



18/5/95.

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5 minutes.

25ièmes Journées des Actinides

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Hotel Duca degli Abruzzi, L'Aquila, Italy

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PROCEEDINGS

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General Program

Scientific Program: oral sessions

Scientific Program: poster sessions

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Extended Abstracts: poster sessions, p.107-187

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List of Participants

SCIENTIFIC COMMITTEE

Patrizia Monachesi, Università dell'Aquila, Chairman
Gabriella Bombieri, Università di Milano
Jean-François Desreux, Université de Liège

LOCAL ORGANIZING COMMITTEE

Patrizia Monachesi
Gianluca Colaiuda
Giuseppe Ciuca
Maria Antonietta Gatti

GENERAL PROGRAM

FRIDAY, April 7

17.00-22.00 : registration
20.00-22.30 : welcome buffet

SATURDAY, April 8

07.30-09.00 : breakfast
08.30-10.45 : ORAL SESSION
10.45-11.00 : coffee break
11.00-13.00 : ORAL SESSION
13.00-14.30 : lunch

15.00-16.00 : posting
16.30-17.45 : ORAL SESSION
17.45-18.00 : coffee break
18.00-19.45 : ORAL SESSION
20.00-21.30 : dinner
21.30-22.30 : POSTER SESSION

SUNDAY, April 9

07.30-09.00 : breakfast
08.30-10.45 : ORAL SESSION
10.45-11.00 : coffee break
11.00-13.00 : ORAL SESSION
13.00-14.30 : lunch

15.00-16.00 : posting
16.00-18.15 : ORAL SESSION
18.30-19.30 : POSTER SESSION
20.00-20.30 : aperitif
20.30-23.00 : gala dinner

MONDAY, April 10

07.30-09.00 : breakfast
08.30-11.00 : ORAL SESSION
11.00-11.30 : coffee break

11.30-19.00 : excursion, lunch
19.00-20.00 : posting
20.00-21.30 : dinner
21.30-22.30 : POSTER SESSION

TUESDAY, April 11

07.30-09.00 : breakfast
08.30-11.00 : ORAL SESSION
11.00-11.30 : coffee break
11.30-12.30 : CONFERENCE SUMMARY
13.00-14.30 : lunch & departure

• A terminal will be available for ETHERNET connections. Login is on the local node VXSCAQ.AQUILA.INFN.IT - Username: JOUAC95 - Password: AQUILA

Users may log on their own nodes from the local node.

• Welcome Buffet, Lunches, Dinners and Gala Dinner are open to all participants.

• For the leisure activities reported in the *final announcement* address to the Hotel Desk.

• All participants are invited to participate in the excursion to *Rome, Vatican, Stiffe and Bominaco, Campo Felice*, according to their choice.

SCIENTIFIC PROGRAM

ORAL SESSIONS

SATURDAY, April 8

08.30-08.45

WELCOME ADDRESS

08.45-10.45

RE-AC DILUTED SYSTEMS

J.M.Sanchez, chairman

\ **LT - J.Schoenes, O.Vogt, F.Hulliger, J.Löhle**
Diluted US and UTe: Two Remarkably Different Systems

LT - O.Vogt, J.Löhle, K.Mattenberg, J. Schoenes, F. Hulliger
High-Temperature Susceptibility measurements on US-LaS
Mixed Crystals

LT - S.Matäs, M.Mihalik, V.Kavečanský, J.Kováč,
M.Orendác, A.Feher, A.A. Menovsky
Magnetic and Electronic Properties of $Ce_{1-x}U_xRu_2Si_2$

LT - P.Wachter, S.Kamba, Y.Mo, M.Grioni
Electronic Structure of $U_{1-x}(La_{1-y}Y_y)_xTe$

LT - A.V.Andreev
Magnetic Properties of $Tb_{1-x}U_xCo_5$

11.00-13.00

AC SYSTEMS UNDER PRESSURE

J.Schoenes, chairman

LT - M.S.S. Brooks
Theory of The Volume Dependence of the Ordering Temperature
of UO_2

\ **ST - O.Eriksson, P. Söderling, B.Johansson**
Ground State Properties of the Actinide Metals

LT - I.N.Goncharenko, J.M.Mignot, A.V.Borman, O.Vogt
Neutron Diffraction Study of the Magnetic Phase diagram of UP
and UAs at very high pressure

ST - V.Ichas, D.Braithwaite, F.Wastin, J.Rebizant, J.C.Spirlet, U. Benedict
Electrical Resistance of NpAs under pressure up to 27 GPa

ST - D.Braithwaite, M.Amanowicz, U.Benedict, V. Ichas, J.Rebizant, J.C. Spirlet, O.Vogt
The triple-k mononictides under Pressure: Is USB the key?

LT - L.M.Sandraskii, J. Kübler, P.Zhan, I.Mertig
Electronic Structure, magnetic and Fermi-surface properties of UPd_2Al_3

ST - P.Link, D.Jaccard, C.Geibel, C.Wassilew, F. Steglich
The electrical resistivity of UPd_2Al_3 at high pressure up to 25 GPa

16.30-17.45 AC IONS IN COMPLEX SYSTEMS
M.Genet, chairman

LT - J.Drozdzyński
Recent Investigations in Chemistry of Tervalent Uranium

ST - P.Vitorge, H.Capdevila, L.Delmau
Actinide(IV) in carbonate Media

LT - L.Bion, Ph.Moisy, C.Madic
Chemical Behavior of U and Pu in the Presence a Specific Complexant of oxidation degree +IV : $Pu_2W_{17}O_{61}^{10-}$

ST - I.Zvara
Experimental Approaches to Studies of Chemistry of Heaviest Actinoids and First Transactinoids

18.00-19.45 OXIDATION STATE OF AC IONS
J.Gal, chairman

LT - J.C.Krupa
The 1S_0 Level of U^{4+} ($5f^2$) Ion in $ThCl_4$

LT - S.A.Kulyukhin, N.B.Mikheev, A.N.Kamenskaya, I.A.Rumer, I.E.Veleshko, M.Z.Kazakevich

The Study of the Possibility of Reducing Actinium and Thorium to Lower Oxidation States

ST - M.Beauvy, S.Pillon-Eymard

Stability of the High Oxidation States of Plutonium and Other Actinides in Solid Compounds

LT - M.Louis, E.Simoni, G.Y.Gesland, S.Hubert

Optical Properties of $U^{3+}/LiYF_4$. Laser Application

ST - R.Auget, C.Camacho, B.Deslandes, J.M.Fournier, S.Méot-Reymond

Premières Mesures de la Susceptibilité Magnétique d'Elements Transuraniens entre 1,2 K at 1000 K

SUNDAY, April 9

08.30-10.45

RE ORGANIC&INORGANIC SYSTEMS

G. Bombieri, chairman

LT - S.Aime, M.Botta, S.Geninatti Crich, E.Terreno, L.Calabi, F.Uggeri, F.Fedeli

New Gd(III) Chelates as Contrast Agents for Magnetic Resonance Imaging

LT - N.Sabbatini, M.Guardigli, I.Manet, R.Ungaro, R.Ziessel

Lanthanide Complexes of Cage-type Ligands as Luminiscent Labels in Fluoroimmunoassays

LT - F.Benetollo, G.Bombieri, K.K.Fonda, K.M.Samaria, L.M.Vallarino

Constitutional and Steric Isomerism in Complexes of La(III) with a DI-METHYL-Substituted SIX-NITROGEN-DONOR Macrocyclic Ligand

LT - D.Gilsoul, V.Comblin, V.Jacques, J.F.Desreux

Lanthanide and Actinide Macrocyclic Chelates: Conformation, Rigidity and Dynamic Behaviour Imparted by Sterically Demanding Ligands

11.00-13.00

RE MAGNETIC & ELECTRONIC PROPERTIES

P.Wachter, chairman

- LT - M.Galli, F.Marabelli, E.Bauer, Y.Mo**
Optical Phonons and Valence Transition in YbCu_4In
- LT - R. Troč, V.H.Tran, A.M.Gurevich, M.Wolczyn, D.Badurski**
Transport and Magnetic Properties of the 2:17 and 1:5 Phases
in the U-Cu-(Al or Ga) Systems
- LT - A. Szytula**
Magnetic Order and Phase Transition in RTX Rare Earth intermetallic
compounds
- LT - K.Yu.Guslienko, X.C.Kou, R.Grössinger**
Magnetic Anisotropy and Spin-Reorientation Transitions in RFe_{11}Ti
(R=Nd, Tb, Dy, Er) Rare Earth Intermetallics
- ST - V.N.Narozhnyi**
Comparative Study of Magnetoresistance and the Hall-effect in
 $\text{Gd}_{1-x}\text{Pr}_x\text{Ba}_2\text{Cu}_3\text{O}_{7-y}$ and UBe_{13} systems

16.00-18.15

PROPERTIES OF CORRELATED AC SYSTEMS

M.S.S.Brooks, chairman

- LT - F.Bourdarot, P.Burlet, B.Fåk, J.Flouquet, N.Pyka,
R.Calcmzuck, P.Lejay**
Relation between the Specific Heat Anomaly and the Magnetic
Excitation in URu_2Si_2
- ST - P.Santini, P.Erdős, G. Amoretti**
Quadrupolar Model of the 17.5 K Phase transition in URu_2Si_2
- ST - B.Chevalier, J. Etourneau, E.Grivei, L.Piroux, T.Roisnel**
Non-Magnetic-Antiferromagnetic Transition in the $\text{U}_2(\text{Ru}_{1-x}\text{Rh}_x)_3\text{Si}_5$
System
- LT - L.Degiorgi, H.R.Ott, F.Hulliger**
Non-Fermi Liquid Behaviour in Correlated Electron Systems
- LT - M.Amanowicz, J.Rebizant, J.C.Spirlet, O.Vogt**

Transport Properties of Np-Monochalcogenides

**ST - J.X.Boucherle, A.Vernière, B.Fák, P.Lejay, J.Flouquet,
J.M.Mignot**

Magnetic Structure of UIr_2Si_2

LT - Q.J.Sheng and B.R.Cooper

Prediction of Wilson Ratio for Heavy Fermion Systems

MONDAY, April 10

08.30-11.00

AC STRUCTURE & SPECTROSCOPY

G.Amoretti, chairman

LT - C.Jeandey, J.P.Sanchez, J.L.Oddou, J.Rebizant, F.Wastin
Physical Properties of $\text{Np}_4\text{Ru}_7\text{Ge}_8$ from Mössbauer study

LT - A.Daoudi, J.C.Levet, H.Noël
Crystal Structure and Magnetic Properties of the hexagonal Uranium
Disulfide

LT - M.Richter, L.Steinbeck, M.Diviš, H Eschrig
Density Functional Calculations of the Crystal Field in UPd_3 ,
 UGa_2 and UPd_2Al_3

**ST - K.Prokeš, L.Havela, V.Sečovský, J.M.Mignot, J.X.Boucherle,
P.Burlet, P.Javorský, E.Brük, A.A.Menovsky, F.R.deBoer**
Neutron Scattering experiments on UNiAl single Crystals

LT - W.Suski, K.Wochowski, T.Mydlarz
The Uranium Pseudoternaries with Favourable Magnetic Parameters

**ST - A.P.Gonçalves, J.A.Paixão, A.Amaro, M.Godinho,
M.Almeida, J.C.Spirlet**
Physical Properties of UFe_6Ge_8 Single Crystals

**LT - I.Zobkalo, E.Coilneau, P.Burlet, E.Ressouche, J.P.Sanchez,
J. Schweizer, J.Larroque**
New Results on NpX_3 Compounds

ST - A.Hiess, J.P.Sanchez, S.Zwirner, C.Rijkeboer, E.Bednarczyk,

F.Wastin, J.Rebizant, G.H. Lander
The Magnetic Structure of NpBe_{13}

ST - M.Divis, M.Richter, H.Eschrig
Ab-initio Calculated Magnetism and Magnetocrystalline Anisotropy
of UGa_2

TUESDAY, April 11

08.30-11.00 **ANALYSIS OF AC MAGNETIC PHASES**
 V.Sechovský, chairman

LT - G.Watson, D.Gibbs, G.H.Lander, B.D.Gaulin, H.J.Matzke,
W.P.Ellis
Magnetic X-ray Scattering on UO_2 Single Crystal

LT - L.Havela, A.V.Andreev, V.Sechovski, M.Olšovec, T.D.Cuong
 UCoAl - What is the Ground State?

LT - S.Cottenier, M.Rots, J.C.Spirlet, J.M.Winand
Perturbed Angular Correlation Study of the Pseudo-binary System
 $\text{U}(\text{In}_{1-x}\text{Sn}_x)_3$

ST - J.A.Paixão, A.P.Gonçalves, S.Langridge, G.H.Lander,
E.Talik, B.Lebech, G.Bonfait, M.Almeida
Neutron and Magnetic X-Ray Scattering investigation of the Magnetic
Structure of UFe_4Al_8 and DyFe_4Al_8

LT - P.Rogl, G.André, F.Weitzer, H.Noël
Nuclear and Magnetic Structure of $\text{U}_3\text{Ga}_2\text{Ge}_3$, a Neutron Powder
Diffraction Study

ST - L.Paolasini, G.H.Lander, S.Shapiro, R.Caciuffo, L.P.Regnauld,
B.Lebech, J.M.Fournier
Magnetic Response Function of UFe_2 Single Crystal

ST - I.Halevy, S.Fredo, J.Jove, W.Potzel, G.M.Kalvius, J.Gal
Unusual Temperature Dependent Mössbauer isomer shift in
 NpF_4

LT - M.Kuznietz, H.Pinto, M.Melamud
Magnetic Phase Diagrams of the $U(M,M')_2X_2$ Systems

11.30-12.30 CONFERENCE SUMMARY
P.Monachesi, chairman

P.Rogl
Chemistry: Outlook

G.Lander
Physics: Outlook

LT= 20-minute Talk
ST= 10-minute Talk

Each session includes 15-25 minutes for discussion . Chairmen are requested to assign 2-4 minutes time to each speaker for discussion.

POSTER SESSIONS

SATURDAY, April 8

21.30-22.30

CRYSTAL STRUCTURE & PROPERTIES H. Noël, supervisor

- P01 - K.Wachtmann, W.Jeitschko**
The Ternary System Thorium-Silicon-Carbon and The New Compound $\text{Th}_{17}\text{Si}_{16}\text{C}_7$
- P02 - N.Dacheux, V.Brandel, M.Genet**
Solid State Chemistry of Uranium and Thorium phosphates
- P03 - H.Flandorfer, P.Rogl**
The System Thorium-Palladium-Boron
- P04 - A.Leithe-Jasper, P.Rogl, P.E.Potter**
Ternary Silicides $\text{Pu}_2\text{T}_3\text{Si}_5$, T = Fe, Tc, Re
- P05 - T.M.Gesing, W.Jeitschko**
The Crystal Structure of $\text{Th}_2\text{Al}_2\text{C}_3$
- P06 - P.Boulet, M.Potel, H.Noël**
Crystal Structure of The Uranium Digermanide UGe_2
- P07 - A.Daoudi, M.Potel, H.Noël**
Crystal Structure and Magnetic Behaviour of the Ternary Uranium and Thorium - Molybdenum Chalcogenides UMo_6S_8 , UMo_6Se_8 and ThMo_6S_8
- P08 - P.Salamkha, O.Bodak**
The neodymium - (iron, cobalt, nickel) - germanium systems
- P09 - O.Sologub, O.Bodak**
The holmium - (ruthenium, rhodium, palladium)- germanium systems
- P10 - L.C.Pereira, J.M.Winand, F.Wastin, J.Rebizant, J.C.Spirlet**
Synthesis and crystal chemistry of ternary intermetallic

compounds An_2T_2X ($An=Pu, Am$ $X=In, Sn$ $T=Co, Fe, Ir, Ni, Pd, Pt$
 Rh, Ru)

- P11 - T.Ebel, J.H.Albering, W. Jeitschko**
Magnetic Properties of the Ternary Uranium-Nickel
Phosphides UNi_3P_2 , UNi_4P_2 , $UNi_{12}P_7$ and $U_6Ni_{20}P_{13}$

SUNDAY, April 9

18.30-19.30 **DIFFRACTION, TRANSPORT
& ELECTRONIC PROPERTIES**
F.Wastin, supervisor

- P01 - D.Kaczorowski**
New Ternary Uranium - Transition metal - antimonides
- P02 - J.Löhle, P.Dekumbis, J.Schoenes, O.Vogt, P.Wachter**
Electrical and Hall Effect measurements on US Single
Crystals diluted with Nonmagnetic LaS
- P03 - D.Laffargue, F.Bourée, B.Chevalier, J.M. Kiat, T.Roisnel
J.Etourneau**
Thermal Dependence of The Unit Cell Parameters of
 U_2M_2X Compounds ($M= Co, Ni$ and $X=In, Sn$)
- P04 - V.H.Tran, R.Troč**
Magnetic Phase diagram of the $U(Ru_{1-x}Pd_x)Ga$ System
- P05 - L.C.J.Pereira, A.Seret, F.Wastin, A.Hiess, J.P.Sanchez
J.Rebizant, J.C.Spirlet**
Electrical Resistivity and Magnetic Susceptibility Measurements
on Np_2T_2X Compounds
- P06 - F.Wastin, A.Seret, J.Fearon, E.Bednarczyk, J.Rebizant**
Studies of $U_{1-x}Np_xPd_2Al_3$ and $U_{1-x}Pu_xPd_2Al_3$ Systems
- P07 - H.Nakotte, A.Lacerda, A.Purwanto, A.C.Larson, K.Prokeš
L.Havela, V.Sechovský, R.A.Robinson, Z.Tun, E.Brück, F.R.deBoer**
Magnetoresistance and Magnetic Structures of UNiGe
- P08 - T.Le Bihan, S.Heathman, S.Darracq, C.Abraham, U.Benedict**

Synchrotron X-ray diffraction study of UX_3
(X=Al,Ga,In,Si,Ge,Sn at high pressure

P09 - E.Gómez-Marín, J.M.Fournier, J.C.Spirlet, F.Wastin
Equipment for High-Temperature Resistivity Measurements

P10 - G.Amoretti, A.Blaise, R.Caciuffo, B.Fák, J.P.Sanchez, P.Santini, D.Schmitt
Analysis of the Crystal Field in $PrFe_2Si_2$ and $PrFe_2Ge_2$
by Inelastic neutron Scattering and Specific Heat

P11 - B.Paci, G.Amoretti, R.Caciuffo, O.Moze
Crystal Field Potential and Rare Earth Electronic Ground
State in RE_TAl_8 Compounds (RE=Tb,Ho,Er T=Mn,Fe,Cu)

P12 - L.C. Andreani, E.Liviotti, P.Santini, G.Amoretti
Effect of Crystal Field on Moment Reduction in Kondo

P13 - A.Continenza, P.Monachesi
Electronic Calculations of $YbCu_4M$ with M=Ag,Au,Pd

P14 - J.Kurplach and M.Diviš
Ab-initio Calculation of Crystal Field in UO_2

P15 - V.Pershina, B.Fricke, G.V.Ionova
Periodicity in Properties of Transactinides and their
Compounds

18.30-19.30 **ORGANIC & INORGANIC SYSTEMS**
G.Desreux, supervisor

P16 - S.Aime, F.Benetollo, G.Bombieri, M.Botta, M.Fasano
Structures of Two Lu(III)-Complexes with Octadentate Ligands

P17 - F.Benetollo, G.Bombieri, L.M.Vallarino
Two crystal Forms of The Macrocyclic Complex
 $[Eu(NCS)_3(C_{22}H_{26}N_6)]$

P18 - S.Aime, M.Botta, S.Geninatti Crich, E.Terreno, G.Viscardi P.L.Anelli, F.Uggeri
NMR Investigation of the Interactions between $Gd-DOTP^5$
and Nitrogen Bases

P19 - S.Aime, M.Botta, S.Geninatti Crich, G.Giovenzana, G.Jommi,

R.Paglierin, M.Sisti

Novel Macrocyclic Ln(III) Complexes relevant to MRI Applications

P20 - G.Bombieri, F.Benetollo, G.Depaoli, M.R. Truter

Azaoxa Macrocyclic Complexes of Lanthanide(III) Thiocyanates.

The Crystal structures of the tris-thiocyanato

(1,7,10,16-tetraoxa-4,13 diaza cyclooctadecane) (TDCO)

Lanthanide (III) Complexes $LN(NCS)_3(TDCO)$ (Ln=Eu, Yb)

P21 - G.Bombieri, A. Fantoni, F.Gliubich

Interactions of the Lanthanide DOTA substituted complexes
with Human Serum Transthyretin

P22 - M.Casarci, G.M.Gasparini, V.Siepe

An Experimental Plant for the Separation and Purification
of Rare Earths in Italy

MONDAY, April 10

21.30-22.30

MAGNETIC STRUCTURES

R.Troč, supervisor

P01 - H.Nakotte, A.Purwanto, R.A.Robinson, F.Trouw, L.Havela,

V.Sečovský, L.Pereira, A.Seret, J.Rebizant, J.C.Spirlet

Magnetic Structures of U_2Rh_2Sn and U_2Ni_2In

P02 - P.Estrela, A.P.Gonçalves, M.Godinho, M.Almeida, J.C.Spirlet

Preparation and Single Crystal Characterization

of $UFe_{10}Mo_2$

P03 - A.Purwanto, H.Nakotte, R.A.Robinson, I.Swainson, V.Sečovský,

L.Havela, K.Prokeš, F.R.de Boer

Crystallographic and Magnetic Structure of $UCuSn$

P04 - A.V.Andreev, M.I.Bartashevich, S.S.Sigaev, D.A.Andreev,

W.Suski, K.Wochowski, T.Goto

Magnetic Properties of $UCo_{10}Si_2$

P05 - A.Szytula, V.Ivanov

Magnetic Properties of UFe_2X_2 (X=Si, Ge) Compounds

in High Magnetic Fields study

- P06 - K. Wochowski**
Magnetic and Electrical Properties of $UCr_xAl_{12-x}2$ Alloys
- P07 - K. Prokeš, V. Sechovský, R. Sonntag, F.R. de Boer,
K.H. J. Buschow, H. Maletta**
Magnetic Structures in UPtSi and UPdSi
- P08 - K. Prokeš, H. Nakotte, L. Havela, V. Sechovský, L.C.J. Pereira,
A. Seret, J.C. Spirlet, P. Svoboda, F.R. de Boer**
Magnetic Anisotropy of U_2Pd_2In
- P09 - L.M. Sandratskii, J. Kübler**
Magnetic Structures of Uranium Compounds: Effects of
Relativity and Symmetry

- Posters, 120cm wide \times 150cm high, are to be mounted during the allocated "posting" time (see General Program) and discussed in the Poster Sessions. Posters must be dismounted at the end of each Session.
- Posting material is provided
- Supervisors of Poster Sessions may be consulted by the speakers of the Conference Summary.