

Opening session OECS13:

Roma, 9th September 2013; 8 a.m.

Ladies and gentlemen, dear Colleagues,

The impressive improvement in deposition, characterization and manipulation of the samples in the last twenty years, has allowed to study the new physics of quantum confined systems and to extend the effects due to the strong radiation-matter interaction: the so called polaritons.

Let me remind that recently polariton light emitting diodes with electrical injection have been experimentally demonstrated by two different scientific groups, and I guess that it should be a good starting point for further interesting applications.

The present series of Conferences on “Optics of Excitons in Confined Systems” , that today opens its 13th meeting in Roma, has represented the ideal platform for discussing this interesting new physics, and has allowed the remarkable outcomes obtained in about twenty-six years of activity.

Let me remind that the first meeting “Excitons in Confined Systems”, of this lucky series, was organized by Prof. Rodolfo Del Sole, and was held in Roma, at Research Area of CNR-Montelibretti, in 1987, in a period where the optical properties of the mesoscopic quantum confined systems were at their infancy. Unfortunately, Prof Del Sole passed away two years ago, and his scientific activity will be illustrated in a special session by title “Exciton from first principles” today morning.

Let me remind that four years later in 1991, in collaboration with Prof. Raffaello Girlanda and Prof. Antonio Quattropani, was organized a second meeting in Giardini Naxos, Taormina, Sicily, where a new title was adopted: “Optics of Excitons in Confined Systems”-OECS, that remained for all the subsequent meetings of this series organized each two years in (see fig.1): Montpellier (France, 1993), Cortona (Italy, 1995), Göttingen (Germany, 1997), Ascona (Switzerland, 1999), Montpellier (France, 2001), Lecce (Italy, 2003), Southampton (UK, 2005), Patti (Sicily, Italy, 2007), Madrid (Spain, 2009), and Paris (France, 2011)

OECS past editions

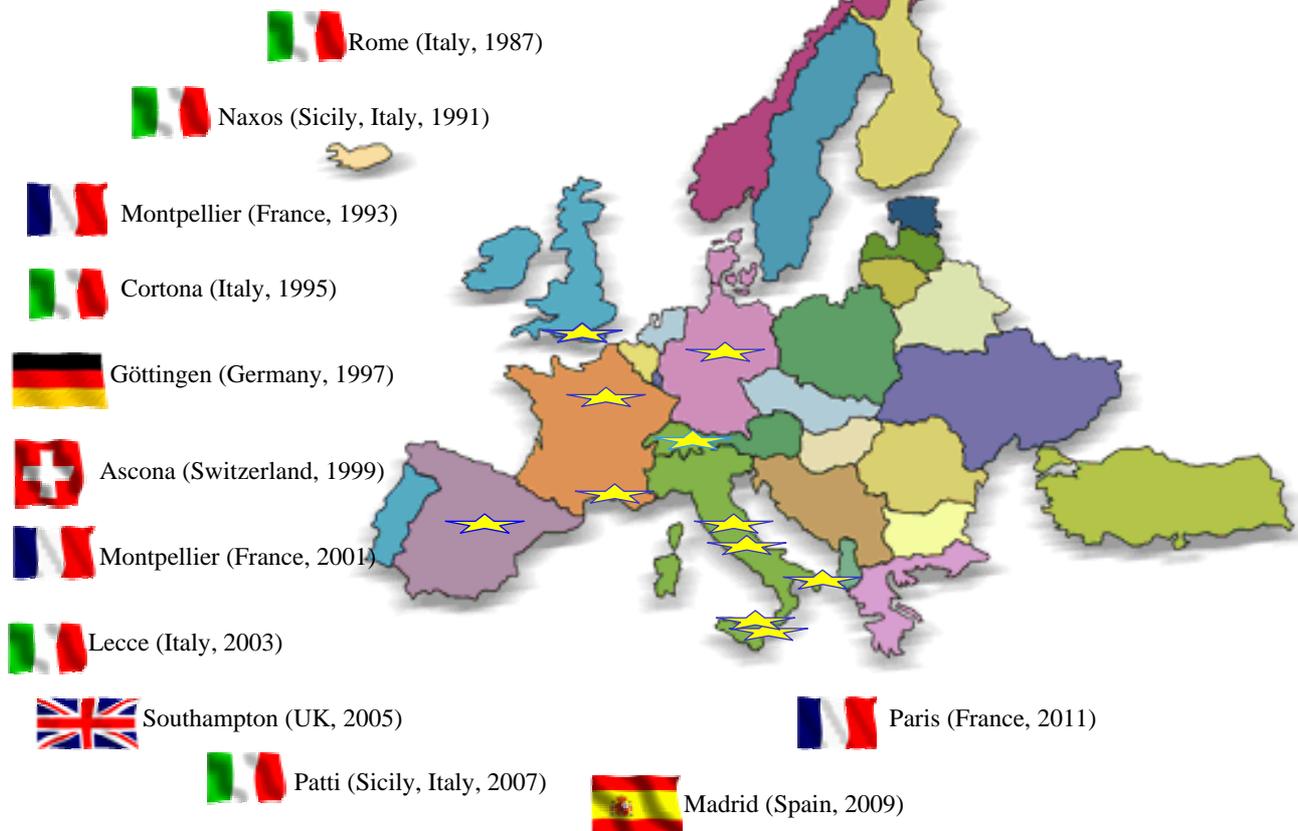


fig.1

Proceedings of the first international meeting on quantum confined excitons held at the CNR Research Area of Rome in Montelibretti, 13-16 , April 1987,

“Excitons in Confined Systems: from semi-infinite solids to quantum wells”

Ed: R. Del Sole, A. D’Andrea, and A. Lapicciarella

(ISBN: 978-3-540-18707-3) has been selected for Springer Book Electronic Archives.



“The Springer Book Archives are an effort at Springer to breathe new life into older books— specifically those published between 1842 and 2005 — by making them available in electronic formats. The archiving project includes about 40 renowned imprints. ... With this initiative we will enable researchers all over the world to access a wealth of information via their libraries. The individual books will not only be made available digitally, but also in print. The Springer Book Archives affirms Springer's commitment to preserve valuable scholarly content, and your book plays an important role in this effort.”

Peter Hendriks,
(President STM Global Publishing & Marketing) mail 29th January 2013

fig.2

In the proceeding presentation of the first meeting (see fig.2) on **“Excitons in Confined Systems: from semi-infinite solids to quantum wells”** was underlined that: *“The aim of the meeting was to discuss the theoretical and experimental aspects of excitons in many different quantum confined systems, from semi-infinite solids to quantum wells. The main idea was to bring together people with different cultural backgrounds to discuss and compare the concepts involved in the different systems”*.

While the general inspiration remains valid till now, the scientific topics present on OECS conferences and the number of contributions have shown a fast increase in this twenty six years in correspondence of a rapid improvement in sample deposition and manipulation that allows to consider the optics of excitons in mesoscopic structures as one of the most dynamic field in the condensed matter physics.

I guess that we can agree that this series of Conferences in “Optics of Excitons in Confined Systems” is now in its maturity, and for this reason, Prof. Rodolfo Del Sole, Prof. Alexey Kavokin and myself have proposed to organise this thirteenth conference back in Rome in order to appreciate the scientific distance covered .

I guess that the positive trend in non-linear optics of exciton-polaritons, that has overcome the most optimistic expectations, is not over. In fact, recently strong non-linear effects, were observed experimentally, namely: superfluidity, solitons, vortices and Bose-Einstein condensation, that allow to hypothesize a new series of all optical devices based on Bose-Einstein condensation of polaritons that probably could be the “core business” of the future OECS conferences.

Moreover, a long lasting discussion about advantages and disadvantages of adopting different theoretical frameworks, based respectively on fermion, boson and composite-boson basis sets, for studying fundamental properties of exciton-polariton, was present in the past years.

In order to evaluate the progress in this field, let me remind that, a framework well suited for computing self-consistent exciton-polariton linear and non-linear optical response, the so called “ABC free theory”, was presented at the very beginning of OECS-Conferences by Prof. Kikuo Cho, while, recently, Prof. Rodolfo Del Sole has shown that “ab initio” GW-calculation and Bethe-Salpeter electron-hole interaction is a correct framework for computing Wannier exciton-polariton in a surface of semiconductors.

The study of all these interesting new effects has allowed to consider the “optics of exciton-polaritons in mesoscopic materials” as one of the most dynamic field of research in the condensed matter physics.

Let me remind that the synthetic program of the meeting is reported on the booklet of abstracts, while the scientific structure of the present meeting is summarized in the next fig.3:

The conference program is composed of *eight sessions* and *one Special session*.

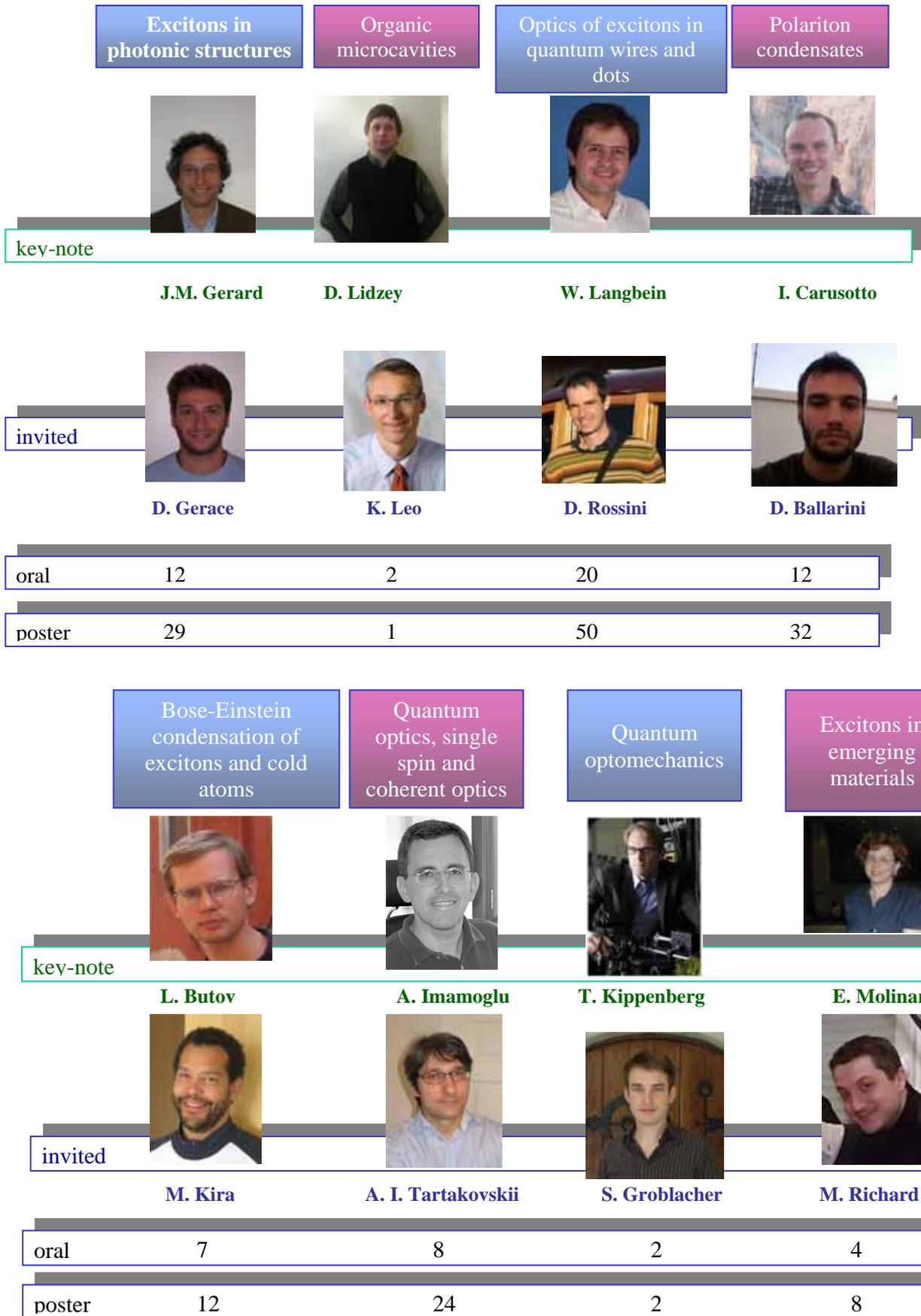


fig.3

Now, let me briefly comment the figures of the present meeting and illustrate some specificities of the meeting organization.

The OECS13 meeting sees the scientific presence of about 870 authors, and the participation of about 200 scientists, coming from the laboratories of 23 different countries (fig.4).

Where participants came from

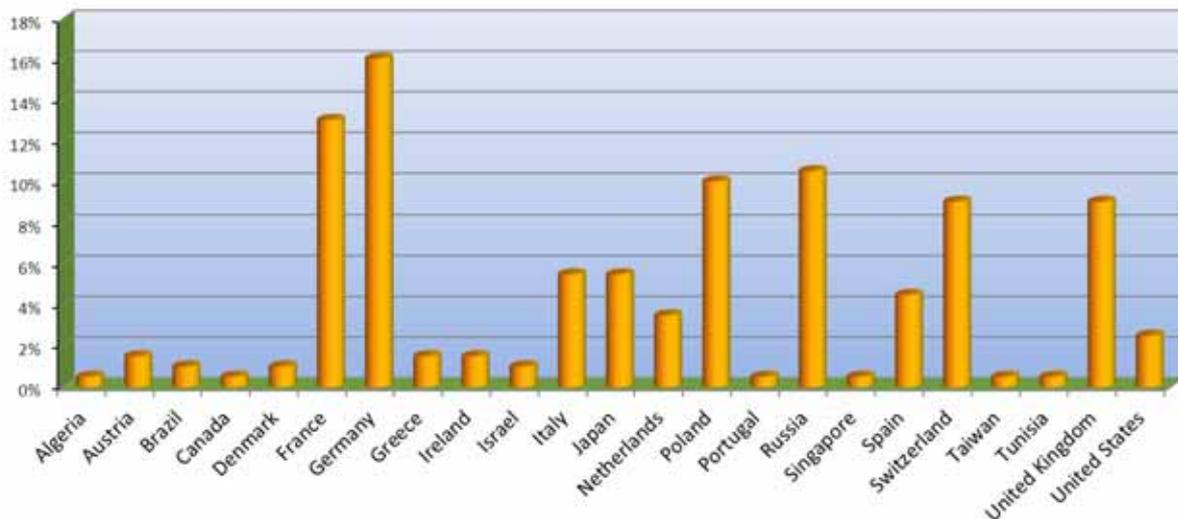


fig.4

Now, let me spend some words about the organization. First of all, I will have to thank the Advisory and Program Committees for the rapid and effective evaluation of the submitted papers. Each paper was evaluated by three different Referees. I would like to underline that in a scale of evaluation from zero to seven, about the 75% , of the presented papers, obtained an high score from 5 to 7 and only the remaining 25% was from 3 to five. Therefore, this statistical distribution of the evaluation responses underlines the high quality of the submitted papers.

Finally, I would like to thank the Mediterranean Institute of Fundamental Physics (in the persons of our friends Alexey and Pino) , and the Institute of Complex Systems (Laura) that enabled us to meet optimistic deadlines, and all the Sponsors which were crucial in making this meeting possible.

Now, let me remind that the present meeting was proposed in Roma from Prof. Rodolfo Del Sole that unfortunately passed away two years ago. In the next slide are shown the main data of his not very long, but intense scientific career (fig.5).

In memoriam of Prof. Rodolfo Del Sole

Born in Roma on 19 June 1944

1963-Graduated at Liceo Visconti in Roma

1969-”Laurea” in Physics with a theoretical thesis

1979- Professor at Camerino University

1980-1981 Collaborating with D.J.Chadi at
Xerox in Palo Alto-California

1985- Professor at University of Roma “Tor Vergata”

1987 , 13-16 of April , Roma, First Int.Conf. on *Excitons in Confined Systems*

1990-2011 Full Professor of Quantum Theory of Solids

One of the father of the EPIOPTIC community and one of the key forces in
in developing the European Theoretical Spectroscopy Facility.

Died in S.Raffaele Hospital of Rocca di Papa on 11 September 2011



fig.5

“Special topic: excitons from first principles”

dedicated to the memory of **Professor Rodolfo Del Sole**, the Chairman of
the 1st OECS who passed away in 2011.



key-note

L. Reining



invited

K. Cho

oral

3

poster

5

fig.6

In the present meeting, I have the honour to introduce Prof. Kikuo Cho that will present a seminar by title: *“Development of general EM response theories stimulated by a collaboration with Rodolfo Del Sole”*, and Prof. Lucia Reining in *“Coupling of excitations in electronic spectra: fingerprints of correlation”* (see fig.6). Both these seminars will illustrate the fundamental achievements obtained in collaboration with Prof. Rodolfo Del Sole, to whose memory the first section of the meeting is dedicated.

Let me underline that Prof. Rodolfo Del Sole was a person totally dedicated to the research in physics, and able to change any scientific work into an extraordinary cultural adventure, and any adventure in an unforgettable friendship, as is well known by his collaborators and friends.

Thanks you for your attention!

Closing session OECS13:

Roma, 13th September 2013; 4 p.m

Dear Colleagues,

It has been a great pleasure for me to have participated at this OECS13 Conference twenty-six years after the first one held in Roma in 1987. Let me remind that Prof. Rodolfo Del Sole was the key person and the organizer of that first Conference.

I will have to thank all the participants that have allowed this interesting meeting, the program and the advisory committees and the colleagues of the “Mediterranean Institute of Fundamental Physics” which enabled us to meet optimistic deadlines. Moreover, it was a real pleasure to observe the presence of a rather large number of young scientists , women and men, a fingerprint that this field of research remains active for all this period.

I hope that the Conference has satisfied most of your scientific expectations, and that you have enjoyed Roma, a chaotic city, but also fascinating with its historical places, its old buildings and churches , its cooking and wines.

Now, let me claim that the OECS13 is over, and remind you that in 2015 the Conference jumps the Mediterranean sea to reach Jerusalem.

I wish our Colleagues of Jerusalem a successful Conference, and for you a nice come back at your home.

Thank you for your patience !