

The Physics and Applications of High Brightness Electron Beams

ETTORE MAJORANA FOUNDATION AND CENTRE FOR SCIENTIFIC CULTURE & ICFA Panels on Beam Dynamics, and Advanced Accelerators

Mission

High brightness electron beams are playing an increasingly critical role in two frontier fields: radiation generation methods and advanced acceleration schemes. Such state-of-the-art radiation production methods include various types of free-electron lasers, as well as inverse Compton scattering (ICS) of intense lasers, having diverse approaches to creating high peak and average power light sources. As they are capable of harder photon production, ICS sources are candidates not only for X-ray sources, but also high-energy physics applications. Likewise, high brightness beams are at the center of future accelerator schemes, e.g. based on high gradient wakefields and electron cooling. Indeed, possibilities exist to create unique light sources based on advanced acceleration schemes, just as intense light sources enable advanced accelerator research. The goal of this workshop is to provide a comparative study of the generation, manipulating, modeling and measuring of high brightness electron beams, and the under-lying methods linking the physics of these beam systems to the physics of advanced applications.

Erice, Sicily

October 9-14, 2005

Co-chairs

L. Palumbo (Univ. Roma "La Sapienza")
J. Rosenzweig (UCLA)
L. Serafini (INFN-Milano)

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Website: <http://www.physics.ucla.edu/PAHBEB2005>

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- Welcome to Sicily !
 - Thank you for traveling
a long way to get here

A land of fire and volcanoes



A land of sea and beautiful beaches





A land of history and civilization



Welcome to Erice !

A center of mythology, history and cultural heritage



Welcome to Ettore Majorana Foundation and Center for Scientific Culture



*The Centre is named after the famous
Sicilian physicist "Ettore Majorana"*

We are grateful to the President of the Center, Prof. *Antonino Zichichi*, and to Prof. *Luisa Cifarelli* for the marvelous hospitality of our workshop in the INFN Eloisatron Project series

The Workshop Series on X-ray FEL's and High Brightness Beams

THE PHYSICS OF HIGH BRIGHTNESS BEAMS
Proc. of the 2nd ICFA Advanced Accelerator Workshop
University of California, Los Angeles, Nov. 1999
edited by James Rosenzweig & Luca Serafini

Web page: www.physics.ucla.edu/AABD

Joint ICFA Advanced Accelerator and Beam Dynamics Workshop

Welcome to the ICFA Workshop on
"The Physics and Applications of
High Brightness Electron Beams"



Hans Bruhn, CERN
Swapnil Chattopadhyay, TJNAF
Max Cornacchia, SLAC
Klaus Floetmann, DESY
Stephen Milton, ANL-APS
Luigi Palumbo, Univ. Roma
Alberto Renieri, ENEA-Frascati
Richard Walker, Sincrotrone Trieste

Masamichi Yamamoto, ANL-Frascati
Bill Pawley, LBL
John Galayda, SLAC
Kwang-Je Kim, ANL-APS
Patrick O'Shea, Univ. of Maryland
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Physics and Science with the X-ray Free-Electron Laser
(Arcidosso, Italy, September 10-15, 2000)
C. Pellegrini and M. Cornacchia



San Domenico
WG1 and WG3

San Rocco
WG4

Piazza San
Domenico

Via Guarnotti

Via Hernandes

San Francesco WG2



Social Tour on wed. afternoon to the Doric Temples of Segesta and Selinunte (V Century B.C.)



Welcome Address - speech notes

Welcome to all the participants of this workshop! Welcome to Sicily, welcome to Erice, welcome to the Ettore Majorana Foundation and Center for Scientific Culture, welcome to the ICFA Workshop on "The Physics and Applications of High Brightness Electron Beams" .

The reason for so many welcomes is the unique combination of a fascinating land that we traveled to, an enchanting town where we'll be living this week, a world-wide famous Center hosting us, an exciting and hopefully successful workshop ahead of us.

Most of you travelled from far away, some of you experienced troubles and some stress during their trip, we are sorry for that, but...

Welcome Address - speech notes

We are sure that all of us will be rewarded by the enchantment of this place and by the excitement of the workshop, by the end of the week.

Why Sicily? The largest island in the Mediterranean sea. Because of its unleashed nature, because of its rich culture and intriguing history. An history of civilizations merging, overlapping and crossing over in time: from Phoenicians to Greeks, from Romans to Normans, Sicily is full of pre-historical and historical masterpieces standing to witness the past.

Why Erice? It's a perfect example of fusion of Phoenician pre-historical mythology with Greek culture and mythology, and later roman.

Welcome Address - speech notes

Phoenician temples dedicated to Astarte were turned into Greek temples for the cult of Aphrodite, the goddess of beauty, later turned by the Romans into the cult of Venus, become also the protecting goddess of sailors.

Every civilization wanted to settle down here at the top of Mount Eryx (to enjoy the stunning view... and to defend from enemies!)

Now the town displays its middle-age to renaissance and baroquean face in churches and palaces (with still some magic spots like Venus Castle flavoring again the spirit of old Phoenicians and Greek times...)

Welcome Address - speech notes

It is in this poetic and inspiring environment that the Ettore Majorana Center developed through the last 42 years an impressive amount of scientific culture, making a deep impact within the world scientific community.

Therefore, we are not only grateful to the President of the Center, Prof. Antonino Zichichi, as well as to Prof. Luisa Cifarelli, for the marvelous hospitality, but we are also proud to conduct our workshop in the context of this world-wide famous Center.

I wish to all of you an exciting and successful workshop!