Ruska's Day • Gazette QEM2025

Ernst Ruska (1906 – 1988)

Ruska joined Max Knoll's research group in the Berlin Technical University in the late 1920s and set out to test the assertion of Hans Busch (1926, 1927) that a rotationally symmetric field can be regarded as a lens. Ruska himself has given a very full account of those early years in "The Early Development of Electron Lenses and Electron Microscopy". In 1931, Ruska and Knoll assembled two simple electron lenses in tandem to form a primitive magnifying device, the prototype of the electron microscope. In 1934, an improved model attained a resolution better than that of any light microscope. The financial crisis of the 1930s obliged Ruska to leave the project but he and his brother Helmut, a doctor, persuaded Richard Siebeck, an influential figure in the medical world, to encourage Siemens to embark on the construction of a commercial model. The first Siemens microscope appeared in 1938 and was put on the market in 1939. 38 instruments were produced. Just in time, the Nobel Committee awarded him the Prize in 1986.

Adv. in Imag.& Elec. Physics 95 (1996)- Peter Hawkes

Today's Program

8:30 Introduction

9:00 Transmission, Electron & Microscopy
by Aurelien Masseboeuf

11:00 Contrast of Defects
by *Florent Houdellier*

13:30 Cup of TEM

16:00 Charged Particle Optics: Principle and Applications
by *Florent Houdellier*

17:45 Electron Detection
by Armand Béché

21:00 Poster Session (even numbers)

It happens the same day

In 1918 Richard Feynman was borned! Yesterday we celebrated the father of wave theory, here we are celebrating one of the main contributor to quantum physics! He received the nobel price for his work on quantum electrodynamics.

Image of the Day

No it is not a star destroyer.... Florent Houdellier will explain everything in his lecture about this contrast effect in Silicium

Editorial : Welcome by Paul Midgley

Welcome to Port-Barcarès and welcome to QEM 2025!

Over the next two weeks you'll have the opportunity to engage with many experts in electron microscopy and with many different microscopy techniques and applications. The programme of lectures, microscope practicals, computer sessions and so on provides a great introduction to this increasingly exciting world. There is a stellar list of speakers and topics ranging from the essentials of microscopy, optics and crystallography to the latest and greatest techniques using state-of-the-art detectors, lenses, spectrometers and more. As with other walks of life you'll learn how machine learning and AI are also becoming routine parts of modern electron microscopy.

Electron microscopy celebrates its 100th birthday in a few years' time but its evolution (and occasional revolution!) means it's as vibrant and exciting as it has ever been.

For students on the workshop this is a great opportunity for you to meet in person both the experts and your fellow students. Everyone eats, sleeps and works in the same place and QEM has always been a wonderfully friendly and sociable workshop because of that - the sunny Mediterranean setting helps of course! Use these two weeks to listen, to learn, to chat and to make contacts – and friendships – that for some will last years or decades.

And QEM is also celebrating its 20th anniversary! The very first QEM was in 2005 again on the French coast, near the beach in St Aygulf. Since then the workshop has gone from strength to strength and is now firmly set in the microscopy calendar. There is a huge amount of work that goes into putting on such a workshop and the organising committee should once again be applauded for their huge efforts.

So just like the best French wines QEM is maturing beautifully and I hope you enjoy the 'flavours' of this year's QEM vintage!

Teacher's Interviews

Florent Houdellier

Best memory of electron microscopy?
The green color...

How a microscopy lab will look like with AI in 20 years?
The same

The techniques you always wanted to learn and didn't?
Music and Cathodoluminescence

Wave or Particle?
Like Superman, particle during the day and wave at night

Aurelien Masseboeuf

Best memory of electron microscopy?
A magnetic vortex moving onto a domain wall under magnetic field. It was originally needing a huge defoc to see it after data treatment. Eventually the other side of the defoc was direct, obvious, and in the paper. If you need data treatment for seeing something, you are never convince.

How a microscopy lab will look like with AI in 20 years?
Data scientists claiming verification of their discovery to machines, instead of microscopists claiming verification from their data.

The techniques you always wanted to learn and didn't?
Scanning TEM, especially Cathodoluminescence… but as Castaing said : "Scanning is not Microscopy."

Wave or Particle?
Platypus !

Teacher's Interviews

Armand Béché

Best memory of electron microscopy ?
First time manipulating the electron shape with a series of Einzel lenses.

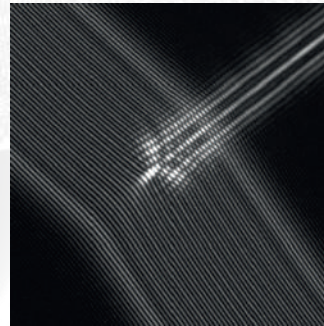**How a microscopy lab will look like with AI in 20 years?**
Much less packed with people

The techniques you always wanted to learn and didn't?
How to drive a backhoe loader and Cathodoluminesence

Wave or Particle?
Definitely wave! Phase plates cannot exist with particles only.

Interferences from biprism "interfering" with the interferences of a defocused nanotube emitting electrons.

Yes, electrons are fermions driving curren one by one.

Yes, electron are waves, no need of being two bosons for this capacity.

Milead Resort Rules

Welcome to the Mileade Holiday Center! First we would like to thank all the center staff that helped to prepare this event. They are wonderfull and helpfull but they have other people to take care of than you, please keep that in mind. You can find below a few rules and tips for your stay :

1/ **Your Bungalow** :
• QEM is full and the Mileade Resort too. So switching room is (really) difficult.
• Cleaning is going to be done once on the week-end: please make sure you remove everything that is on your bed (cloth, etc...) if not they will not be able to change the sheet.

2/ **Quiet Area**:
You are not alone in the center, which means that when you are close to bungalows try to keep your voice down. To party and tchat please stay in the vicinity of the bar and far away from the Quiet Zone (see app).

3/ **Restaurant** :
The restaurant work as a selfservice. We will be all sitting in the same area inside the restaurant. Part of it has been reserved for us.

Breakfast : 7h30 - 9h
Lunch : 12h30 - 13h30
Dinner : 20h - 21h
The coffee after lunch and dinner has to be taken (and paid) at the bar
If you need a pic-nic for lunch, it has to be asked to restaurant crew the day before (and before noon).

4/ **Bar** :
The bar is open : 12h00 to 14h30
17h00 to 01h00 (if there are still people in it !)
You have to pay for you drinks.

5/ **Laundry**:
You can do your laundry, The washing machine is closed to the conference room. You can pay with your credit card.

6/ **Code for the resort entry**: 28450B (but several seems to work)

7/ **WIFI** : SSID : QEM and password : QEM2025!

Pics of the Installation

Secret Recipe : The Maï-Taï

Ingredient:

3 cl of withe Rhum
3 cl of dark Rhum
2 cl of Pulco Jus
1 Lemon Jus
2 cl Triple Sec
1,5 cl Sugar Cane
1.5 cl of Orgeat sirup

Preparation :

In a shaker you put 4 or 5 ice cubes
Then you start to incorporate....wait actually you don't care !
You just put everything
You shake it for 15 to 20 seconds thinking of Taylor Swift
When it is very cold you can put it in a beautifull glass and Enjoy!
But...be carefull it is an extremely treacherous cocktail...perfect for your QEM nights!

A Tiki Mug

Advertisement and News :

Welcome to QEM !! Enjoy your stay!

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or use its web version : app.qem2025.com

If you want to display anything in the Gazette just send
it to gazette@qem2025.com

Weather Forcast

21 °C and a bit Cloudy !

The CNRS is the French national scientific center. Whitout them we will not have been able to organize this school. They helped us make this school possible with financial and logistical support.