

# Collective Phenomena in Condensed Matter Physics : Symposium in Honor of Philippe Nozières



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## Beyond X-Rays absorption experiments

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My first contact with Philippe Nozières dates back to 1964. At the time, I was doing my thesis at the ENS Laboratory in Paris and I went to ask him questions about plasmons in semiconductors. Later on, in 1971, I was beginning to take an interest in synchrotron radiation possibilities and I had some questions on his famous paper, written with C. T. De Dominicis on the absorption of X-rays in metals, which had been verified by experiments on Na at the Hamburg synchrotron (DESY) by the R. Haensel'group. At that time, synchrotron radiation experiments were done on synchrotrons, only allowing absorption measurements. It is only in the beginning of the 1970s, with the appearance of stable beams on collision storage rings and later on with the use of undulators, allowing to gain a factor 104 in brightness, that it was possible to develop completely new techniques like Angle Resolved Photoemission Spectroscopy, Resonant Inelastic Scattering in soft X-Rays, Inelastic Scattering in hard X-Rays with 1 meV resolution, extremely high pressure Diffraction and Spectroscopy. This allowed to do some experiments that, previously, could be done only with neutrons. I will describe some recent results showing the enormous evolution of these possibilities. From 1992, being DG of the ESRF between 1993 and 2002, I interacted more with Philippe, especially after 2004, having offices side by side, which allowed me to see him and ask some stupid questions.

**Presenter:** Prof. PETROFF, Yves