

Basics of optical spectroscopy studies of superconductors

*Andrés F. Santander-Syro*¹

¹Centre de Sciences Nucléaires et de Sciences de la Matière, Université Paris-Sud, Bâtiments 104 et 108, 91405 Orsay cedex, France

Abstract. Optical spectroscopy is a valuable tool to explore the electrodynamics of elementary excitations in the bulk of solids. This lecture will introduce the basic aspects of optical (infrared and visible) spectroscopy and its application to the study of superconductors. We will discuss among others how the technique can be used to study the superconducting gap, the superfluid density, and microscopic aspects of the superconductivity mechanism in high-T_c superconductors.

Suggested introductory readings (textbook, review or articles)

1. M. Dressel and G. Grüner. *Electrodynamics of solids*, Cambridge University Press (Cambridge), 2002.
2. F. Wooten. *Optical properties of solids*, Academic Press (New York), 1972.