

Euclid Imaging Consortium Science Book

A. Refregier, A. Amara, T. D. Kitching, A. Rassat, R. Scaramella, J. Weller, for the [Euclid Imaging Consortium](#)

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The energy density of the Universe is dominated by dark energy and dark matter, two mysterious components which pose some of the most important questions in fundamental science today. Euclid is a high-precision survey mission designed to answer these questions by mapping the geometry of the dark Universe. Euclid's Visible-NIR imaging and spectroscopy of the entire extragalactic sky will further produce extensive legacy science for various fields of astronomy. Over the 2008-2009 period, Euclid has been the object of an ESA Assessment Phase in which the study of the Euclid Imaging instrument was under the responsibility of the Euclid Imaging Consortium (EIC). The EIC Science Book presents the studies done by the EIC science working groups in the context of this study phase. We first give a brief description of the Euclid mission and of the imaging instrument and surveys. We then summarise the primary and legacy science which will be achieved with the Euclid imaging surveys, along with the simulations and data handling scheme which have been developed to optimise the instrument and ensure its science performance.

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