In conclusion, it has studied two energy transition of the cadmium atom, one in normal Zeeman effect and one in anomalous configuration. Accurate alignment of the optical bench was previously achieved, thanks to which clear and centered images of interference peak have been obtained. Then it's done the calibration of experimental apparatus, and it's calculated the relationship between the current and the magnetic field in the experimental range. It's important the analysis of the uncertainty of B, mainly represented from the non-uniformity of the magnetic field in cadmium lamp. In the experiment were many other errors sources. First of all experimental limitations, represented by reduced resolutions of CCD and large errors on B and delta. In the anomalous effect, images were not really clear. There it was an overlap of many spectral lines, both in the same order and in different ones, and indistinguishability of peaks. It's was also not negligible the thickness of peaks, estimated without magnetic field. For these reasons, it's necessary to use an approximation method to estimate the lines positions. This method caused big errors on the fit parameters, so on the Bohr magneton. It's however got four values of magneton Bohr with good compatibility between them and also with the theoretical value. So we have calculated the weighted average which represents our definitive result. The experiment, although with some limitations, returns reliable values.