



Industrial Physics
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A reference for Mr Lennino Cacace

Monday, 7 March 2005

Lennino was a work experience student in our Space Optics Group at the CSIRO Industrial Physics laboratory during the period 2 August 2004 to middle of January 2005. He initially came to our group for a period of fourteen to sixteen weeks to gain experience in the high precision optics environment. At CSIRO Lennino worked on a number of projects including: the Double Corner Cube project (DCC) for NASA's Space Interferometry Mission (SIM) and the Large Aperture polishing project (an internal CSIRO activity to upgrade the optical fabrication infrastructure). In the latter project Lennino designed a concept for safe and efficient lifting and manipulation of large and heavy optical substrates to and from a 1.2 m diameter polishing lap. For this purpose he devised a clever vacuum suction configuration which can safely lift and transport substrates weighing up to ~ 500kg in a precise manner ensuring that the delicate polishing lap and substrates are not damaged during the process. Lennino's main project however was the DCC. In this project he designed an intricate multi axes stage and an air spaced etalon for precise interferometric metrology of external right angles on cubes, prisms and other components. This ultra high precision mechanism uses elastic flexures and kinematic couplings to allow nanometric alignment of a test component inside the etalon and the subsequent metrology of right angles to 0.1 arc seconds accuracy. This piece of equipment was vital in CSIRO being able to measure and therefore fabricate the demanding components used to satisfy the DCC specifications. Lennino also designed the concept for the assembly jig which was used to assemble and align the DCC to the extreme precision and tolerances.

During his work at CSIRO Lennino interacted closely with the optical and the mechanical fabrication staff to ensure that his designs were appropriate for the end use and that they were being manufactured as he intended. In the optics group Lennino was exposed to many related fields and disciplines including: interferometry, microscopy, optical and mechanical fabrication and testing, optical coatings, software design and simulation tools etc.

Throughout this work Lennino demonstrated a high level of mechanical design knowledge and initiative coupled with the ability to learn quickly and apply new and complex concepts. He required minimal supervision and was able to efficiently plan and carry out the work schedule to meet and in some cases exceed the demanding objectives we set for him. The designs he developed, were innovative, worked very well and have provided us with essential infrastructure required to carry out the DCC project. Lennino was highly motivated often taking the work home with him, well organised and delivered what was asked of him. He is a good communicator, has a pleasant personality and is delightful to work with. We were so pleased with his work that we offered him paid casual employment until mid January 2005 (at which time he had to go back home to Holland to continue his studies). On the basis of his performance and achievements at CSIRO Lennino should have a highly successful career and will be a valuable addition to any organisation.

A handwritten signature in blue ink, appearing to read "B. Oreb", is written over a light blue horizontal line.

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