



Raw Ethernet based hybrid control system for the automatic control of suspended masses in gravitational waves interferometric detectors

Tuesday 28 September 2004 10:00 (1 minute)

In this paper we examine the performance of the raw Ethernet protocol in deterministic, low-cost, real-time communication. Very few applications have been reported until now, and they focus on the use of the TCP and UDP protocols, which however add a sensible overhead to the communication and reduce the useful bandwidth. We show how low-level Ethernet access can be used for peer-to-peer, short distance communication, and how it allows the writing of applications requiring large bandwidth. We show some examples running on the Lynx real-time OS and on Linux, both in mixed and homogeneous environments. As an example of application of this technique, we describe the architecture of a hybrid Ethernet based real-time control system prototype we implemented in Napoli, discussing its characteristics and performances. Finally we discuss its application to the real-time control of a suspended mass of the mode cleaner of the 3m prototype optical interferometer for gravitational wave detection operational in Napoli.

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Session Classification: Poster Session 1

Track Classification: Track 1 - Online Computing