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A Study on Draught Measurement System Using GPS Multi-path Signal

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Summary: Multi-path signal affects to decrease the quality of receiving signal according to a bad influence on direct receiving signal for data communication. So developers of GPS receiver, antenna and software have been making their efforts to remove multi-path signal. For the ship, in the case of measuring draught, the draught gauge is developed using ultrasonic wave as remote display equipment for large vessels, but in general they read out from draught marks. These measurements are taken at mooring or anchoring, so it is impossible to measure on sailing. We considered constructing the measurement system of draught by utilizing multi-path signal effectively. The proposal system is able to get wave height analytically from GPS signal. Such as draught measure on board, it is possible to remove the personal error of measurements because of mechanical and automatically measurements by this system against measuring items by eyes. In this paper, firstly the proposed Draught Measurement System is explained. Secondary, a simulation for availability of this system is shown, and especially our simulation show that a narrow beam width makes measurements more precise. Finally, an experiment that was used the prototype system was described to verify this proposed system. From the results of the simulation and the experiment, several problems to be solved are made clear, and it is considered that the proposed system had a possibility to use one of the draught measures.

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