

Using Float Ambiguities with Application to Decimeter-level Real-time Kinematic Positioning

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SUMMARY

The Jet Propulsion Laboratory (JPL) of the National Aeronautics Space Administration (NASA) has launched Internet-based Global Differential GPS (IGDG) In Spring 2001. It is claimed to offer an accuracy of 10 cm horizontal and 20 cm vertical Using the real-time orbit and clock products, in real-time, any where on Earth, at any time. Since only one GPS receiver is required to collect the data, the point positioning techniques are easily adaptable for various platforms.

In order for the PPP system to be used in real-time positioning and navigation applications, accelerating ambiguity convergence therefore is essential for a fast positioning convergence solution. The use of real-time kinematic positioning using carrier phase float ambiguity values is assessed in this paper. a partial ambiguity searching and fixing approach based on a pseudo-fixing concept was developed. A partial fixing procedure have indicated that a positioning accuracy of several decimetres can be achieved once the fixing is completed.

The numerical results and analyses of float solutions in both static and kinematic is processing. Even though the primary applications of this research are kinematic, Fixed solution results in static processing mode are also presented.

BIOGRAPHICAL NOTES

Mr. Wang Shuang-xi graduated with his BSc from Dalian Naval Academy in 2001. He is currently doing his Master's degree in Navigation and positioning.

Mr. Xu Jian is a associate professor of Dalian Naval Academy where he is responsible for teaching and research related to positioning, and navigation.

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