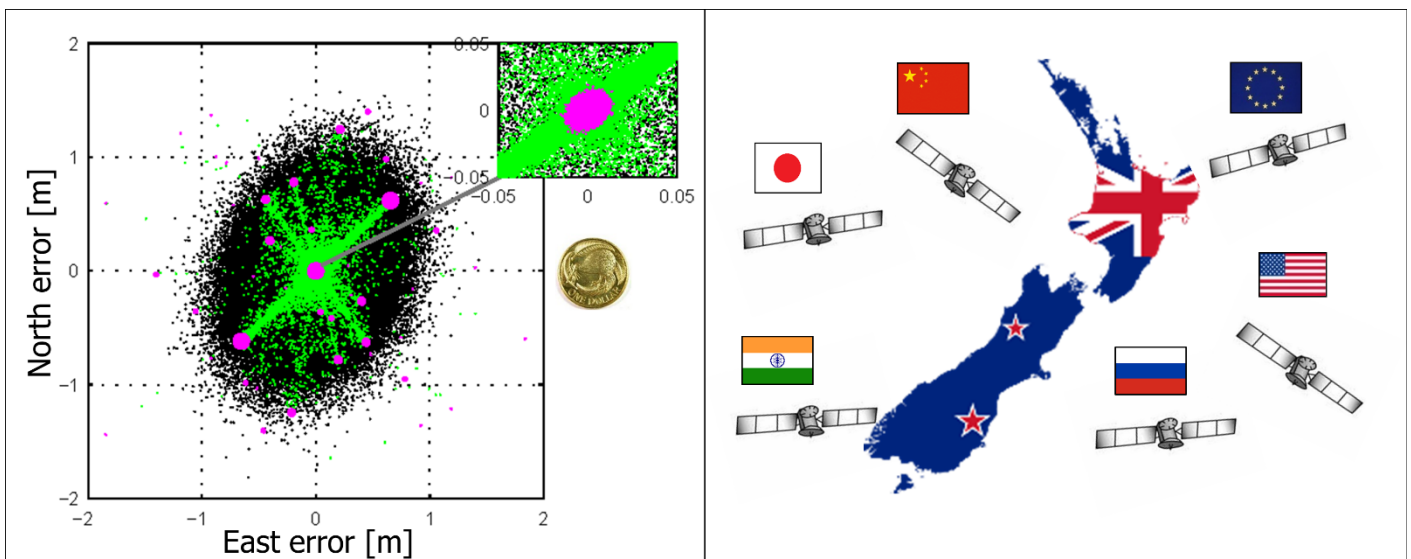


School of Surveying Te Kura Kairūri Lunchtime Seminar Series

Best Integer Equivariant estimation for low-cost, multi-GNSS, single- and dual-frequency RTK receivers with short and long baselines

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The key to precise global navigation satellite system (GNSS) positioning is carrier phase integer ambiguity resolution with a high success rate. When the success rate is too low, the user will normally prefer the float solution (left column, black dots). The alternative can be to use the best integer equivariant (BIE) estimator (green dots), since it is optimal in the minimum mean squared error (MMSE) sense. Low-cost receiver real-time kinematic (RTK) precise positioning has become possible through the many signals that can be obtained by combining several GNSSs, such as BDS, Galileo,

QZSS and GPS (right column). In this presentation, we will present results using such low-cost multi-GNSS data to compare the performance of the BIE and integer least squares (ILS) estimator (magenta dots). We will demonstrate that the positioning performance of the BIE estimator will always equal or be better than that of the float solutions. It will finally be shown that BIE will always be better in the MMSE sense than the ILS solution when the success rate is at low to medium levels, whereas for high success rates we get a similar performance to ILS.

Thursday 15th July 2021 (12pm – 1pm)

L1 Lecture Theatre | School of Surveying, 310 Castle Street