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New Investigative Findings from the Debiased Converted-Measurement Kalman Filter

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ABSTRACT

The original algorithm for the 2-D debiased converted-measurement Kalman filter (CMKF) specified, with incorrect mathematical justification, a requirement for evaluating the average true bias and covariance with the best available polar estimate, rather than exclusively with the polar measurement. Even though this original algorithm yields better tracking performance than the debiased-CMKF algorithm which evaluates the average true bias and covariance exclusively with the polar measurement, this paper shows the specified requirement compromises the statistical consistency between the debiased converted measurement's error and the average true covariance. To resolve this apparent contradiction, this paper provides the correct empirical explanation for the tracking-performance improvement obtained by the specified requirement.

KEYWORDS

Tracking, Converted Measurements, Kalman Filter, Debiased CMKF, Polar-To-Cartesian Conversion

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References

- [1] D. Lerro and Y. Bar-Shalom, "Tracking with Debiased Consistent Converted Measurements Versus EKF," *IEEE Transactions on Aerospace and Electronic Systems*, Vol. 29, No. 3, 1993, pp. 1015-1022.
- [2] D. T. Lerro, Alion Science and Technology, Private Communication, Mystic, CT, June 2008.
- [3] D. T. Lerro, Alion Science and Technology, Private Communication, Mystic, CT, October 2008.
- [4] X. R. Li and V. P. Jilkov, "A Survey of Maneuvering Target Tracking—Part III: Measurement Models," *Proceedings of SPIE Conference on Signal and Data Processing of Small Targets*, San Diego, CA, USA, 2001, pp. 423-446.

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