

2007h

“Effective Directions Measurements for Spacecraft Attitude: I. Equivalent Directions,” Malcolm D. Shuster, *The Journal of the Astronautical Sciences*, Vol. 55, No. 4, October–December 2007, pp. 463–478.

The equivalent vector representation is a set of direction measurements which will lead to a given attitude estimate and attitude covariance matrix. The equivalent vectors have the properties that they are statistically independent, are generally three in number, and conform to the QUEST measurement model. Hence, they may be used in the Wahba problem. They have the disadvantage that for some attitude covariance matrices, they may have negative variance parameters. This can happen, for example, if the given attitude covariance matrix were generated by the TRIAD algorithm.

This work is continued in 2007i, in which a second set of effective measurements, the predicted directions, are presented and in 2007j, in which the two possible sets of effective measurements are used to study several strategies for attitude data fusion.

Succeeded by 2007i, 2007j.

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