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“Effective Direction Measurements for Spacecraft Attitude: III. Defective Measurements and Data Fusion,” Malcolm D. Shuster, *The Journal of the Astronautical Sciences*, Vol. 55, No. 4, October–December 2007, pp. 492–510.

This paper reviews many approaches to the problem of data fusion for attitude measurement, some of which are as old as attitude determination itself. In addition, it compares the data fusion method consistent with maximum-likelihood estimation, the Brozenec-Bender method of 1994, the method of I. Y. Bar-Itzhack and R. H. Harman (2002), and discarding the Sun-sensor data entirely. It is shown that the effective measurement assumed in the Bar-Itzhack-Harman prescription is mathematically impossible and that at best does not improve attitude accuracy at all. In some cases it could make the fused attitude much less accurate than if the Sun sensor data were discarded entirely. In addition, the prescription of Bar-Itzhack and Harman cannot be called “optimal,” because their fusion estimate takes no account of the error levels of the star-tracker attitude estimate and the Sun-sensor data.

The article of Bar-Itzhack and Harman cites no journal article after 1965, and no work at all which is later than 1978. The date of Wertz, *Spacecraft Attitude Determination and Control*, is given incorrectly as 1984. The true date is 1978. In addition, their paper does not cite my 1989b, published fourteen years earlier, which gives a correct method for data-fusion within the Wahba problem. This is unjustifiable. In a conference article by Professor Bar-Itzhack presented at the same conference as the conference version of his work with R. H. Harman on “Optimal Fusion,” he, in fact, cites my article 1989b. Was this an unusual lapse of memory? In fact, the "Optimal Fusion" article of Bar-Itzhack and Harman cites no work on data fusion (by which we understand the fusion of multiple attitude estimates or the fusion of an *a priori* estimate of the attitude with new data), even though such activities have been in evidence (for example, as differential correction) since the very beginning of attitude estimation.

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