1989b

"Maximum Likelihood Estimation of Spacecraft Attitude," M. D. Shuster, *The Journal of the Astronautical Sciences*, Vol. 37, No. 1, January–March, 1989, pp. 79–88.

This was one of a trilogy of papers (together with 1989c and 1990d) on further developments of the QUEST algorithm, which apply to any solution method for Davenport's q-algorithm and, for the most part, to any solution of the Wahba problem. The most significant result of this first paper was that the Wahba attitude matrix emerged as the maximum-likelihood estimate if one assumed the QUEST measurement model. This put the Wahba problem in the mainstream of maximum-likelihood estimation rather than being an heuristic curiosity. The work also showed the simple connection between Davenport's attitude profile matrix and the optimal attitude and attitude estimate-error covariance matrix, and that the attitude profile matrix could be regarded as a representation of both the attitude and the attitude error covariance matrix. This idea of an enhanced representation of both attitude and attitude covariance is expanded in 2006c.

Succeded 1981a.

Succeeded by 1989c, 1990d. (See the comment for 1981a for the complete sequence of QUEST-related archival publications.)