"Kalman Filtering of Spacecraft Attitude and the QUEST Model," M. D. Shuster, *The Journal of the Astronautical Sciences*, Vol. 38, No. 3, July–September, 1990, pp. 377–393; Erratum: Vol. 51, No. 3, July–September 2003, p. 350.

This article was the final installment of the QUEST trilogy. It had two important results: (1) the implementation of the QUEST algorithm as a preprocessor of simultaneous vector measurements in the Kalman filter (previously presented in 1989d); and (2) the demonstration that the measurement covariance matrix of the QUEST model, $\sigma_k^2 (I_{3\times3} - \hat{\mathbf{W}}_k \hat{\mathbf{W}}_k^T)$, with $\hat{\mathbf{W}}_k$ a unit vector, could be replaced by, $\sigma_k^2 I_{3\times3}$ in the Kalman filter. Result (1) had, in fact, been discovered independently by engineers at INPE in Brazil before me and so acknowledged (see 1989d and this work). It is in this form that the attitude Kalman filter is implemented most frequently now, especially by the Jet Propulsion Laboratory in its deep space missions. Result (2) was later implemented by Donald Chu and Joseph Sedlak in their "unit-vector filter" (see 2001c for the proper citation).