Wiener integral expansion mentioned above. This conjecture was settled affirmatively only in 1980 [**1**]. However, this point can be avoided by making a Girsanov transformation after which the observation process Z_t is a brownian motion, and by using a stopping time argument.

There have been a number of interesting recent developments in nonlinear filtering theory, which are beyond the scope of Kallianpur's book. One direction concerns the theory of "robust" or "pathwise" solutions to the filtering equations [**4**]. The objective is to obtain $\hat{s}_t$ for all possible observation trajectories $Z.$, not just for a set of probability 1, in such a way that $\hat{s}_t$ depends continuously on $Z.$ in the uniform norm. Another direction of recent research is to explain the structure of the optimal filter by studying a certain Lie algebra associated with it [**3**]. A related problem is to find finite-dimensional nonlinear filters, in other words, filters whose evolution in time is described by a finite number of stochastic differential equations [**2**].

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Perturbation methods in applied mathematics, by J. Kevorkian and J. D. Cole, Applied Mathematical Sciences, vol. 34, Springer-Verlag, Berlin and New York, 1981, x + 558 pp., $42.00.

Introduction to perturbation techniques, by Ali Hasan Nayfeh, Wiley, New York, 1981, xiv + 519 pp., $29.95.

Singular perturbations, in 1982, is a maturing mathematical subject with a fairly long history and a strong promise for continued important applications throughout science. Though the basic intuitive ideas involving local patching of