being the excellent books they are, I obtained copies before they were offered to me for review. Ah well!

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Multiphase averaging for classical systems, with applications to adiabatic theorems by Pierre Lochak and Claude Meunier. (Translated by H. S. Dumas), Applied Mathematical Sciences, vol. 72, Springer-Verlag, New York, Berlin, Heidelberg, 1988, xi + 360 pp., $39.80. ISBN 0-387-96778-8

The idea of a separation of scales is of fundamental importance in our attempts to understand the world. When we speak of movement up or down "on the average," we are appealing to a process which removes rapid fluctuations and uncovers underlying trends. The formal perturbation procedure known as the method of multiple scales (or, in its simplest form, two-timing) relies on such a separation of time scales, as do the various averaging and homogenization theorems which make up an important part of the theory of differential equations and which form the subject of the book under review.

The simplest form of averaging, over a single time scale, proceeds as follows. Starting with a sufficiently smooth vector field $f(x, t)$ on $\mathbf{R}^n \times \mathbf{R}$ which depends T-periodically on time, t, the *averaged vector field* is defined as

$$\overline{f}(x) = \frac{1}{T}\int_0^T f(x,t)\,dt. \tag{0}$$