



Fig. 7.11 Instantaneous amplitude and phase of sunspot series at $f_0 = 1/11$ cycles per year (41-term least squares filter with cutoff frequency $f_c = 0.04968$ and convergence factors).

Least Squares Filters

Figure 7.11 shows the instantaneous amplitude and phase that result from using a least squares filter with convergence factors, as described in Section 7.4. For comparison with the earlier figures, the demodulation frequency was $f_0 = 1/11$ cycles per year. The filter has 41 terms ($s = 20$), giving a transition band of width $\delta = 2/(2s + 1) = 2/41$ cycles per year. The transition band extends from the *pass frequency* of 0.02529 cycles per year to the *stop frequency* of 0.07407 cycles per year. The transfer