FIGURE (i) Phase difference of the movement at different A-Scans relative to the 1st A-Scan. The 1st A-Scan was chosen to be the center of the macula and then 20 consecutive A-Scans were taken on the temporal side.
FIGURE (ii) The movement of the macula precedes the movement of the cornea
FIGURE (iii) Phase delay between the cornea and the retina calculated for the first three harmonics of the axial shift.
FIGURE (iv) Time traces of the movement of different ocular elements from a typical subject which shows frequencies up to 7th harmonics. O, R, C represents oximeter, retina and cornea respectively. (A) Cornea and retina movement and (B) fundus pulse amplitude, along with the oximeter signal. (C) Fourier power spectrum of the cornea and retina movement and (D) fundus pulse amplitude along with power spectrum of oximeter signal.
**Data Processing**

For data processing, each recorded frame (B-Scan) is loaded into the computer via our analysis software. Out of this B-Scan, a reference B-Scan is subtracted. The reference B-Scan is a scan recorded at the beginning of the experiment without the signal from the eye. This procedure removes any constant noise coming from the source spectrum or interference within the system. From the reference removed B-Scan, one of the A-Scan which in our case was the A-Scan at the macula was selected manually. On this A-Scan Savitzky-Golay Filter is applied to smooth the data which is then squared to reduce the effect of noise around the ocular tissue signal. From the smoothened A-Scan, a window containing the axial profile of the desired ocular tissue i.e. either cornea or retina is selected for which the centroid is calculated using the relation, 

\[
\frac{\sum X_n I_n}{\sum I_n}
\]

where \(X\) is the position, \(I\) is the intensity and \(n\) is the index of the \(n^{th}\) pixel in the A-Scan. This procedure is performed on all the subsequent B-Scans to obtain a time trace of the centroid which gives the axial shift of the ocular tissues.