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computer code for calculating velocity structure parameters using Rayleigh wave phase velocity dispersion data

We developed a computer code to derive a crust and upper mantle velocity structure for southwest Iran (Firuzabad region) in the central Zagros by an application of the two events, single station method of Rayleigh wave phase velocity dispersion analysis. Three sets of digital recordings of large earthquakes in the Firuzabad region in 1994 and 1995 made at the Iranian Long Period Array (ILPA) were used to perform the spectral analysis. The observed Rayleigh wave phase velocity dispersion data then systematically inverted to obtain a best fitting model. The preferred model has a crustal thickness of 44+/-2 km. The upper crust consists of a ~ 8 km thick sedimentary layer (Vp ~ 5.15 km/s) above a ~ 22 km thick upper crystalline crust (Vp ~ 6.19 km/s). The lower crystalline crust is unusually slow (Vp ~ 6.75 km/s) with a thickness of ~14 km. The total thickness of the crystalline crust in this region of the central Zagros (~36 km) is similar to the thickness of the stretched margin of the Arabian Platform, suggesting that the Zagros is now in an early stage of continental collision.

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