two radial(F,3H) and three non-radial modes simultaneously. Also we derived some physical properties of V650 Tau such as the mass(1.7 M⊙) and the radius(1.6 M⊙)

We note that the strong decrease of the amplitude of the f_1(F-mode) and the strong increase of the amplitude of the f_2(3H-mode) relative to the previous data (Belmonte et al. 1993, Michel 1994) It is clearly indicated that V650 Tau experiences the mode-switching between F-mode and 3H-mode.

VRc Photometry of the Dwarf Cepheids

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Among large amplitude δ Scuti variables, photometric observations for four bright variables of AD CMi, EH Lib, XX Cyg, and YZ Boo were secured by utilizing the VRc color system, By using the Kurucz model atmosphere grid, atmospheric parameters of these variables were determined for those data in the literature obtained by observing with *ubvyβ* color system. Also synthetic color indices of (V - Rc) corresponding to different effective temperature, surface gravity, and metallicity were calculated by using the flux calculation by Kurucz. This result was used to derive the theoretical [F*u*,(V-Rc)] relationship and compared with the empirical [F*u*,(V-Rc)] relationship derived by using the standard angular diameter stars. As applied to classical cepheids, we tried to estimate the distance and radius of four variables by comparing the angular radius variation calculated from our [F*u*,(V-Rc)] relationship with the radial displacement curve from radial velocity data in the literature, We could obtain the reliable result for AD CMi and it was found that, for other three variables, there are large phase shifts between two different variations.

Intensity Variation of the SiO MASER Line of Long Period Variables

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In principle, both radiation and collisions are capable of pumping the SiO masers. In order to check which pumping mechanism is more efficient, we observed the time variation of the line (v = 1, J = 2-1) intensity of SiO molecule for about 80 long period variables with wide range of period, and compared SiO maser line intensities with their optical light variation. Level populations were calculated by the rate equation for our model including the 3 vibrational states with 7 rotational states of each vibrational state. Thought solving the radiative transfer equation with the Sobolev approximation, we estimated the line profiles emerging from an expanding envelope for several transitions.