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F-05 **Dynamic stabilization in nonlinear oscillators** 김영태 (아주대 분자과학기술학과), 김상윤 (강원대 물리학과) Dynamic stabilization of unstable periodic orbits in various nonlinear oscillators, such as a directly-driven pendulum, a parametrically-driven inverted pendulum, or Duffing-type oscillators with multi-well potential, is frequently observed but its mechanism has not been understood clearly. We present the results through numerical and experimental studies of some of the nonlinear oscillators that the dynamic stabilization occurs through a (subcritical or supercritical) pitchfork bifurcation of the unstable periodic orbits. We also suggest that such dynamic stabilization be a generic property of driven nonlinear oscillators with both the stable and unstable periodic orbits.

F-06(초) **Super-lattice, rhombus, square, and hexagonal standing waves in magnetically driven ferrofluid surface** 피현재,박소연,이지수,이경진 (고려대) Standing wave patterns that arise on the surface of ferrofluids by (single frequency) parametric forcing with an ac magnetic field are investigated experimentally. Depending on the frequency and amplitude of the forcing, the system exhibits various patterns including a superlattice and subharmonic rhombuses as well as conventional harmonic hexagons and subharmonic squares. The superlattice arises in a bicritical situation where harmonic and subharmonic modes collide. The rhombic pattern arises due to the non-monotonic dispersion relation of a ferrofluid.

F-07(초) **Quasi-Unit Cell Picture for Quasicrystals** 정형채 (세종대) Quasicrystals are solids with quasiperiodic translational order and crystallographically disallowed rotational symmetry. Their lattice structure has been mainly described as the three dimensional generalization of the Penrose tiling. Recently, Gummelt found a covering with a single type of decagon prototile whose lattice structure is isomorphic to the Penrose tiling. Based on this covering, we propose the quasi-unit cell picture for constructing structural models for quasicrystals. Unlike Penrose tiling models, quasicrystal structure is described in terms of a single repeating unit in this picture. It is different from the unit-cell picture of crystals in the sense that quasi-unit cells overlap their neighbors. This picture is simpler than previous models since the entire atomic structure can be resolved by the atomic decoration of a single unit. In spite of its simplicity, quasi-unit cell picture provides more general atomic models than Penrose tiling picture.

F-08 **Model for correlations in stock markets** 노 재동 (인하대학교) We propose a group model for correlations in stock markets. In this model it is assumed that the stock markets are composed of several groups, within which the stock price fluctuations are correlated. The spectral properties of empirical correlation matrices reported in [Phys. Rev. Lett. **83**, 1467 (1999); Phys. Rev. Lett. **83**, 1471 (1999).] are well understood from the model. It provides the connection between the spectral properties of the empirical correlation matrix and the structure of correlations in stock markets.

F-09 **A Superconducting Mechanism Based On Two-Band Model with Kondo-Type Interaction** 구제환,김엽(경희대) It is shown that a Kondo-type interaction between the carrier and localized spins in the system with two bands can drive a superconductivity. Using the the same caculational method as in Ref. 1, the superconducting transition temperature, resistivity above the transtion temperature magnetic susceptibility are calculated. To relate our model to the high T_c cuprates,