Bulletin of the Korean Physical Society

Vol. 1 No. 1 Sept. 1983

第47回 総会プログラム，論文抄録集

日 時：1983. 10. 22-23
場 所：海軍士官学校

社団法人 韓国物理学会
Korean Physical Society
Short-range Correlation Effect in the Electron Gas.

JONGBAE HONG and DO YOUNG KIM (Seoul National University). The effects of short-range correlations on the dynamical properties of the electron gas are studied by extracting large-momentum transfer terms from static susceptibilities. The relaxation function involving only short-range correlations is obtained analytically by calculating infinite continued fraction. The peaks of our dynamical from factors agree with experiments performed by Platzman and Eisenberger, better than any previous theoretical predictions. The f-sum rule is considered. The sum rule provides how much dominant the short-range correlation is in a particular momentum transfer case.


Relative Role of Long-range and Short-range Correlations in the Electron Gas. JONGBAE HONG (Seoul National University). On the basis of the previous work on short-range correlation effects in electronic system, long-range and short-range correlation effects are considered simultaneously in this study. The results give not only relative roles of the two correlations at a certain momentum transfer, but also their combined effects on the dynamic form factors and structure factors at an arbitrary momentum transfer region. Our results describe well the occurrence of double peaks in to dynamic from factors at an intermediate momentum transfer region. It is possible to provide with more correct ground state energies of several simple metals.

Universality of k 3\textsuperscript{P} and k 4\textsuperscript{P}-cascades for Area-Preserving Maps.

KOO-CHUL LEE and SANG-YOON KIM (S.N.U.) and BUK-IN CHOI (KAIST). We have studied numerically period-doubling and period-quadrupling cascades of periodic orbits of 2-dim. area-preserving maps. The period-doubling $\delta_n$-sequence converges as $n^{-\infty}$, and the limit value in 20.2. Unlike the period-doubling cascades, each of period-doubling $\alpha_n$- and $\beta_n$-sequences has two limit values. Two limit values of $\alpha_n$-sequence are -17.9 and 2.45, and two limit values of $\beta_n$-sequences are -31.0 and 6.02. On the other hand the period-quadrupling $\delta_n$, $\alpha_n$- and $\beta_n$-sequences converges as $n^{-\infty}$. The numerical study also shows that period quadrupling sequences confirm the universal scaling behavior irrespective of basic period k. The universal scaling constants $\delta$, $\alpha$ and $\beta$ are 24.5, -5.61 and 14.3 for the period quadrupling sequence.

Phase Transition of the F.C.C. Ising Ferromagnet with Competing Interactions.

JOO YOUNG LEE, DOOCHUL KIM (S.N.U.) and JONG Hoon OH (KAIST). The correlated mean field theory and the Monte Carlo simulation are utilized to determine the