

Opening Address

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Dear distinguished guests and ladies and gentlemen,

Welcome to the YITP-RCNP workshop on Chiral Restoration in Nuclear Medium.

The purpose of this workshop is to discuss chiral properties of nuclear medium including nuclei at the normal nuclear density and explore the possibility of partial restoration of chiral symmetry in the nuclear medium at zero or relatively low temperatures rather than at high temperatures. One of the major issues to be discussed is whether the normal nuclear density is dense enough to give rise to partial restoration of chiral symmetry.

In fact, this field is a rapidly developing and active field, both experimentally and theoretically. Naming some of hot topics:

- (1) Prediction of a softening of the spectral function in the scalar channel associated with partial restoration of chiral symmetry in nuclear medium and the suggestive experiments done at TRIUMF, BNL and Mainz,
- (2) Possible decrease of the pion decay constant f_π^* in heavy nuclei suggested by the experimental data of deeply bound pionic nuclei in GSI,
- (3) A spectral change of the vector mesons in heavy nuclei shown by CERES and a KEK experiment, which suggest partial restoration of chiral symmetry in the heavy nuclei,
- (4) Possible roles of chiral symmetry in the baryon spectrum in the free space and in nuclear medium

Furthermore, there are several proposals of experiments to explore the possibility of anomalously dense kaonic nuclei, theoretically suggested quite recently. One should also mention that chiral restoration in nuclear medium may show up interesting complexities in heavy quarkonia containing light quarks in the medium.

Although these topics are certainly interesting, one must say, they are still controversial. Moreover they have never been discussed altogether, in spite of the closeness of the underlying physics.

Because Japanese groups are involved in some of the above topics, I got an idea about one year ago that it would be interesting and important that all the experts in theories and experiments in different topics get together and discuss the common problems in the occasion when PaNic02 is held in Osaka, near Kyoto. I consulted with Hatsuda san, Shimizu san, Yamazaki san and other organizing committee members about this idea. They supported the idea, and thus we are now here. This is a satellite workshop of PaNic02, and supported by YITP, Kyoto University and RCNP, Osaka University.

The workshop is composed of solely invited talks and we encourage the participants to critically discuss the proposed theories and interpretations of the experimental data and propose new experiments to confirm the interpretations both from the theoretical and experimental sides. We have rather long discussion time for each talk.

When planned last year, we did not expect that so many physicists would be interested in and participate in this workshop, although we knew that the field was rapidly developing. Therefore the budget is very very limited. We apologize the participants if there would be inconvenience due to the limited budget and the limited numbers of the local staff members.

Thank you for your attention.