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**Measurement of Low-mass Vector Mesons in the PHENIX experiment at RHIC** YUJI TSUCHIMOTO, CNS, Univ. of Tokyo, PHENIX COLLABORATION — Extensive study of heavy-ion collisions at RHIC has established the creation of a strongly coupled Quark Gluon Plasma (sQGP). Study of the Chiral Symmetry restoration and degree of freedom of quarks is important for understanding of the sQGP properties. The spectral shape of the Low-mass Vector Mesons (LVM's),  $\rho$ ,  $\omega$  and  $\phi$  can be modified in the medium by the partial restoration of Chiral symmetry. Due to the short life times of the LVMs, this modification can be directly studied by measuring low-momentum LVM via their decays into electron pairs, which do not participate in strong interaction and keep their properties unchanged throughout the evolution of the system. Since the width of the meson may be affected in the medium, the branching ratio of various decay modes may also be modified from vacuum values. In particular, the branching ratio of  $\phi \rightarrow e^+e^-$  and  $\phi \rightarrow K^+K^-$  may be sensitive to the modification due to the small Q-value of  $\phi \rightarrow K^+K^-$ . Suppression of  $\phi$  at high- $p_T$  in Au+Au collisions is interesting to discuss flavor dependence of quark energy loss in the QGP. The  $R_{AA}$  of  $\phi$  suggests the suppression is guided by the number and flavor of valence quarks rather than by hadron mass. The PHENIX experiment has measured  $\omega$  and  $\phi$  production using di-electron and different hadronic decay channels at mid-rapidity at  $\sqrt{s_{NN}}=200$  GeV/c<sup>2</sup> p+p, d+Au and Au+Au collisions.

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