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A Modified Approach for Calculating Dressed Quark Propagator at Finite Chemical Potential

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Abstract: Based on the rainbow approximation of Dyson-Schwinger equation and the assumption that the full inverse quark propagator at finite chemical potential is analytic in the neighborhood of $\mu=0$, it is proved that the dressed quark propagator at finite chemical potential μ can be written as $G^{-1}_0[\mu] = i\gamma\cdot pA(p^2)+B(p^2)$ with $p_\mu=(\vec{p}, p_4+i\mu)$. From the dressed quark propagator at finite chemical potential in Munczek model the bag constant of a baryon and the scalar quark condensate are evaluated. A comparison with previous results is given.

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Key words: chemical potential dependence, Dyson-Schwinger equation approach

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