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Interpolating mass gap equation between the instant form and the
front form of relativistic dynamics COLTON BRADLEY, CHUENG-RYONG
JI, North Carolina State Univ — We present a mass gap equation linking between the
instant form dynamics and the light-front dynamics by interpolating them together
with an interpolation variable. We discuss a nucleon dressed in pion loops with
the pseudovector $\pi N N$ coupling and techniques in non-linear dynamics to achieve
a numerical result. The equivalence of the light-front, equal-time and covariant
formulations in meson-baryon interactions has been previously demonstrated. In
particular, the self-energy of a nucleon dressed by pion loops has been discussed
to show the universality of the leading nonanalytic behavior of the chiral dynamics
consistent with QCD. In this poster, we take the previous self-energy calculation as
the kernel of the integral equation and discuss the characteristic of the mass gap
equation particularly in the limit of the light-front dynamics.

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