Dyson-Schwinger approach to light pseudoscalars at finite temperature

We study the temperature dependence of the pseudoscalar meson properties in a relativistic bound-state approach exhibiting the chiral behavior mandated by QCD. Concretely, we adopt the Dyson-Schwinger approach with a rank-2 separable model interaction. After extending the model to the strange sector and fixing its parameters at zero temperature, $T = 0$, we study the T-dependence of the masses and decay constants of all ground-state mesons in the pseudoscalar nonet. Of chief interest are η and η'. The influence of the QCD axial anomaly on them is successfully obtained through the Witten-Veneziano relation at $T = 0$. The same approach is then extended to $T > 0$, using lattice QCD results for the topological susceptibility. The most conspicuous finding is an increase of the η' mass around the chiral restoration temperature T_{Ch}, which would suggest a suppression of η' production in relativistic heavy-ion collisions. The increase of the η' mass may also indicate that the extension of the Witten-Veneziano relation to finite temperatures becomes unreliable around and above T_{Ch}. Possibilities of an improved treatment are discussed.