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Chiral thermodynamics with charm

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Chiral thermodynamics of charmed mesons is formulated
at finite temperature within a $2 + 1 + 1$-flavored effective
Lagrangian incorporating heavy quark
symmetry.
The charmed-meson mean fields act as an extra source which
breaks
the chiral symmetry explicitly. This leads to
effective interactions of
the light and heavy-light
mesons, which depend on temperature.
Effective masses
of the scalar and pseudoscalar charmed-mesons tend to
approach each other as increasing temperature, so that
the splitting
between the chiral partners is reduced.
These chiral splittings turn out
to be less sensitive
to the light-quark flavors, attributed to the
underlying
heavy quark symmetry. Consequently, chiral symmetry
restoration is
more accelerated in the strange
charmed-mesons than in the strange light
mesons.

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