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Modification of Hadronic Properties in Hot/Dense Matter

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Modifications of hadronic properties in hot and/or dense matter can, in principle, encode information on (precursor) effects related to the chiral phase transition. After a brief introduction to chiral symmetry breaking and its manifestations in the hadron spectrum in vacuum, we review various approaches to assess in-medium effects on hadrons. We emphasize that chiral symmetry alone implies substantial modifications in matter, as spectral functions of “chiral partners” (e.g. π and “ σ ,” ρ and a_1) are required to (approximately) degenerate at the phase transition. We furthermore discuss applications to, and interrelations of, experiments at RHIC and JLAB (including dilepton, dipion and pi-N spectra), and attempt to identify future directions.