APR11-2011-000739

Abstract for an Invited Paper
for the APR11 Meeting of
the American Physical Society

The search for exotic hadrons, and the hadron spectrum[1]

SIMON CAPSTICK, Department of Physics, Florida State University

Hadrons have been conventionally described as made up of three quarks (baryons) or a quark-antiquark pair (mesons) bound by a confining potential, with short-range interactions motivated by what is known about quantum chromodynamics (QCD). The ground and excited states of these systems can account for most known hadrons. However, there is no reason why the gluon field binding the quarks into hadrons cannot itself be excited, and there can be any number of additional quark-antiquark pairs present. Recent rapid progress has been made using the lattice field theoretical approach to describing such states, and conventional hadrons, using QCD. In some cases unconventional hadrons can have exotic properties that give them unique experimental signatures. Theoretical predictions for such states and the evidence for their existence will be reviewed, along with the status of experiments designed to search for them.

[1]This work was supported in part by DOE grant DE-FG05-92ER40750.