Coupled-channel systems in a finite volume ZOHREH DAVOUDI,
University of Washington — In this talk I will motivate studies of two-body coupled-
channel systems in a finite volume in connection with the ultimate goal of study-
ing nuclear reactions, as well as hadronic resonances, directly from lattice QCD. I
will discuss how one can determine phase shifts and mixing parameters of coupled-
channels such as that of pipi-KK isosinglet system from the energy spectrum in
a finite volume with periodic boundary conditions. From the energy quantization
condition, the volume dependence of electroweak matrix elements of two-hadron pro-
cesses can also be extracted. This is necessary for studying weak processes that mix
isosinglet-isotriplet two-nucleon states, e.g. proton-proton fusion. I will show how
one can obtain such transition amplitudes from lattice QCD using the formalism
developed.

Zohreh Davoudi
University of Washington