1019-46-47   **William Arveson*** (`arveson@math.berkeley.edu`), Department of mathematics, University of California, Berkeley, CA. *The asymptotic lift of a completely positive map.*

Given a normal unit-preserving completely positive map $L : M \to M$ acting on a dual operator system M (abbreviated UCP map), we show that there is an automorphism of another dual operator system N (i.e., a UCP map on N having a UCP inverse) that catches all of the asymptotic behavior of L, called the *asymptotic lift* of L. The asymptotic lift is shown to be unique up to isomorphism, and is characterized as the "largest" lifting of L to a reversible UCP map.

We show that when the original map $L : M \to M$ acts on a von Neumann algebra M, the asymptotic lift of L also acts on a von Neumann algebra. In that case, we identify the asymptotic lift as the tail flow of the minimal dilation of L, and we show that it is frequently a nontrivial W^*-dynamical system. We also show how the Poisson boundary of L can be described in terms of the asymptotic lift, and we calculate the asymptotic lift for a variety of examples. (Received August 02, 2006)

1