Andreev Edge State on Semi-Infinite Triangular Lattice: Detecting the Pairing Symmetry in Na$_{0.35}$CoO$_2$.yH$_2$O TAMAR PEREG-BARNEA, University of British Columbia, HSIU-HAU LIN, Physics Division, National Center for Theoretical Sciences, Taiwan — We study the Andreev edge state on the semi-infinite triangular lattice with different pairing symmetries and boundary topologies. We find a rich phase diagram of zero energy Andreev edge states that is a unique fingerprint of each of the possible pairing symmetries. We propose to pin down the pairing symmetry in recently discovered Na$_x$CoO$_2$ material by the Fourier-transformed scanning tunneling spectroscopy for the edge state. A surprisingly rich phase diagram is found and explained by a general gauge argument and mapping to 1D tight-binding model. Extensions of this work are discussed at the end. ref: cond-mat/0407187