FFLO surface bound state  SHI-HSIN LIN, PAWEL REDLINSKI, BOLDIZSAR JANKO, University of Notre Dame, DANIEL AGTERBERG, University of Wisconsin - Milwaukee — Here we study the inhomogeneous superconducting phase of heavy fermion superconductor CeCoIn5. Specifically, we propose a possible existence of FFLO surface bound states. We anticipate that the node of FFLO superconducting state would coincide with the surface to lower the energy. The order parameter vanishes at the interface and increases towards the bulk. This is similar to the case in vortex core of type II superconductor in that the normal region is confined by superconducting wall, except that one side now is vacuum. We thus anticipate bound states to exists at the surface, just as the Caroli-de Gennes-Matricon states exist in the vortex core. We will perform a self-consistent calculation using Bogoliubov-de Gennes equation to obtain the bound surface state spectrum, which can be directly compared to scanning tunnelling microscope (STM) measurements.