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Topological current at an interface between superfluid ^{3}He A- and B-phases YASUMASA TSUTSUMI, Condensed Matter Theory Laboratory, RIKEN — At a surface of the superfluid ^{3}He, the surface Andreev bound state accompanied with edge current emerges due to a topological phase transition. The topological phase transition at the surface is occurred because the superfluid gap of the superfluid ^{3}He among topological superfluids is closed at the interface of a topologically trivial vacuum. Since the paring symmetries are different between the superfluid ^{3}He A- and B-phases, topological features are quite different between the A- and B-phases. The A-phase is a chiral superfluid with the spontaneous edge mass current while B-phase is a helical superfluid with the spontaneous edge spin current. At an interface between the A- and B-phase, a topological phase transition is also occurred because they belong in a different topological classification . Then, based on the quasiclassical Eilenberger theory, we discuss topological mass and spin current carried by the bound state at an interface between the A- and B-phases.

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