Higher homotopy commutativity in localized Lie groups and gauge groups

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McGibbon and Saumell studied the higher homotopy commutativity of p-localized Lie groups in the sense of Williams. In this talk, we determine the higher homotopy commutativity of p-localized Lie groups in the sense of Sugawara, which has a deep connection with higher homotopy associativity and L-S category. This talk is based on the recent joint work with Sho Hasui and Daisuke Kishimoto.