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Combinatorial curve neighborhoods of the affine flag variety of type A_n^1.

Let X be a flag manifold. Given a (multi)degree d and a subvariety Ω of X, the curve neighborhood of Ω is the union of all rational curves in X of degree d incident to Ω. Buch and Mihalcea introduced this notion in order to study the quantum cohomology and quantum K theory rings of the flag manifold X. Calculations of curve neighborhoods are equivalent to the combinatorial problem of finding certain maximal paths in the Bruhat graph of X. This combinatorial point of view extends beyond the ordinary flag manifolds, and I will explain how one can calculate curve neighborhoods of Schubert varieties in the affine flag variety of Lie type A_n^1. In general, the curve neighborhood of a given Schubert variety is a union of 'larger' Schubert varieties. In many cases we prove that all these Schubert varieties have the same dimension, and they are enumerated by certain roots in the affine root system. This is a joint work with Leonardo Mihalcea. (Received September 24, 2018)