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Backward Rauzy-Veech algorithm and horizontal saddle connections

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Abstract. We study the combinatorial and dynamical properties of translation surfaces with horizontal saddle connections from the point of view of backward Rauzy-Veech induction. Namely, we prove that although the horizontal saddle connections do not rule out the existence of infinite orbits under the backward Rauzy-Veech algorithm, they disallow the ∞-completeness of such orbits. Furthermore, we prove that if an orbit under the backward Rauzy-Veech algorithm is infinite, then the minimality of the horizontal translation flow is equivalent to the eventual appearance of all horizontal saddle connections as sides of the polygonal representation of a surface.

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