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Jaroslav Kwapisz* (jarek@math.montana.edu), Department of Mathematical Sciences, Montana State University, P.O. Box 172400, Bozeman, MT 59717. **L-cut conjecture and non-injectivity of Abel-Franks map.** Preliminary report.

Let M be a translation surface of genus $g \geq 1$. An *L-cut* is an oriented curve K tracing a vertical segment followed by a horizontal segment. Two L-cuts K, K' are *parallel* iff they begin at the same point z_0 and end at the same point z_1 and the loop $K'K^{-1}$ is null-homologous. The z_i must be *saddles* (singularities of M), possibly $z_0 = z_1$. You may exclude M with vertical or horizontal saddle connections.

Conjecture: If $g > 1$ then there is a pair of (distinct) parallel L-cuts K, K' .

Slicing along K and K' (and regluing) decomposes M into two simpler translation surfaces. The conjecture implies that any M arises from genus one surfaces by repeated connected sums along L-cuts. This parallels the classical result about topological surfaces but is more delicate. With Andy Bouwman, we only tackled $g = 2$.

I will discuss different approaches to the conjecture as well as its applications, including the open question (going back to R. Bowen and M. Hirsch in 1960's) about embedding of pseudo-Anosovs into hyperbolic toral automorphisms. The candidate embedding is a dynamical analogue of the classical Abel-Jacobi map (baptized *Abel-Franks map* by M. Gromov). (Received February 15, 2016)