1073-05-236 **Guantao Chen*** (gchen@gsu.edu), Department of Mathematisc and Statistics, Georgia State University, Atlanta, GA 30303, **Han Ren**, Department of Mathematics, East China Normal University, Shanghai, Peoples Rep of China, and **Songling Shan**, Department of Mathematics and Statistics, Georgia State University, Altanta, GA 30303. *Graphs Containing Homeomorphically Irreducible Spanning Trees.*

Let G be a graph. A spanning tree of G is called a *homeomorphically irreducible spanning tree* (HIST) if it does not contain vertices of degree 2. Hill conjectured that every triangulation of the plane other than K_3 contains a HIST. Malkevitch extended this conjecture to near-triangulations of the plane (2-connected plane graphs such that all, but at most one, faces are triangles). Albertson, Berman, Hutchinson, and Thomassen confirmed the conjecture. Given a surface Π, they asked whether *every triangulation of* Π *contains a HIST*. We show that every connected and locally connected graph with more than 3 vertices contains a HIST. Consequently, a triangulation of any surface contains a HIST. We will also present results regarding the following two questions proposed by Albertson, Berman, Hutchinson, and Thomassen:

1. Does every graph such that every edge is on at least two triangles contain a HIST?

2. Is it NP-complete to decide whether a subcubic graph contains a HIST?

(Received August 02, 2011)