1035-68-570 **Zdenek Dvorak***, Georgia Institute of Technology, School of Mathematics, 686 Cherry Street, Atlanta, GA 30332-0160, and **Daniel Kral** and **Robin Thomas**. *Coloring triangle-free graphs on surfaces.*

A well-known theorem of Grötzsch states that any triangle-free graph in plane is 3-colorable. This is not true in general for graphs on surfaces of higher genus, e.g., all non-bipartite quadrangulations of projective plane have chromatic number 4. However, Thomassen has demonstrated a polynomial-time algoritm for deciding whether a graph of girth at least 5 on any fixed surface is 3-colorable. We improve this result by finding a polynomial-time algoritm to decide 3-colorability of triangle-free graphs on any fixed surface. (Received September 11, 2007)