1035-57-1562   **Colin C Adams*** (`Colin.Adams@williams.edu`), Bronfman Science Center, Williams College, Williamstown, MA 01267, and **Thomas Kindred**. *A Classification of Spanning Surfaces for Alternating Knots and Links.*

Given an alternating projection of an alternating knot or link, and a choice of splitting at each crossing, one can generate a possibly nonorientable surface spanned by the link in a similar manner to Seifert's algorithm. The resulting surfaces are called layered surfaces.

In this paper , we prove that if L is an alternating knot or link in an alternating projection P, and S is a spanning surface, then there exists a layered surface S' corresponding to P, possibly with a collection of added crosscaps and handles, which has the same genus, orientability and aggregate slope as S.

In addition to providing a determination of all genera and aggregate slopes of spanning surfaces, this also allows the determination of the minimal nonorientable genus, also known as the crosscap number, for any alternating knot or link, as the number of layered surfaces corresponding to an alternating projection is finite. (Received September 20, 2007)

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