962-57-77 **Joel S. Foisy*** (foisyjs@potsdam.edu), Department of Mathematics, SUNY Potsdam, Potsdam, NY 13676. *A sufficient condition for a graph to be intrinsically knotted.* Preliminary report.

We call a graph G *intrinsically knotted* if every tame spatial embedding of the graph contains a knotted cycle. In 1983, Conway and Gordon showed that every tame spatial embedding of K_7, the complete graph on 7 vertices, contains a knotted Hamiltonian cycle. In this paper, we adapt the methods of Conway and Gordon to show that $K_{3,3,1,1}$ is intrinsically knotted. In the process, we establish that if a graph satisfies a certain linking condition for every tame spatial embedding, then the graph must be intrinsically knotted. Conway and Gordon showed that K_7 is intrinsically knotted by showing that the sum of the arf invariants of all Hamiltonian cycles in K_7 is odd for every embedding. Kohara and Suzuki demonstrated that the argument used by Conway and Gordon cannot be applied directly to $K_{3,3,1,1}$ by showing a particular embedding of $K_{3,3,1,1}$ that contains exactly two trefoil knots as Hamiltonian cycles, and no other knotted Hamiltonian cycles. We show that the sum of the arf invariants of a certain set of cycles in a certain subgraph of $K_{3,3,1,1}$ is odd for every embedding. The particular subgraph depends on the embedding. (Received July 24, 2000)