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Jonathan Cutler* (jcutler2@math.unl.edu), Department of Mathematics, Avery Hall 238, University of Nebraska-Lincoln, Lincoln, NE 68588, and **Jamie Radcliffe**. *On the number of complete bipartite subgraphs of a graph.*

Entropy methods have recently been employed by Kahn to bound the number of independent sets in a regular bipartite graph. Galvin and Tetali noted that these methods extend to bounding the number of homomorphisms from a regular bipartite graph. Our research grows out of a conjecture of Galvin and Kahn, and examines the very special case of homomorphisms into a fully-looped path of length two. We, in fact, look at the problem in the complementary graph, where a homomorphism into this graph corresponds to a complete bipartite subgraph. Thus, our question becomes an extremal one: which graph on a given number of vertices and edges has the most complete bipartite subgraphs? We answer this and show that some interesting extremal behavior exists. (Received September 10, 2006)