

1137-55-291

**Qingying Deng\*** (814251161@qq.com), 1111 south laflin street, AP 1610, chicago, IL 60607, and **Xian'an Jin** and **Louis H Kauffman**. *Graphical virtual links and a polynomial of signed cyclic graphs.*

For a signed cyclic graph  $G$ , we can construct a unique virtual link  $L$  by taking the medial construction and convert 4-valent vertices of the medial graph to crossings according to the signs. If a virtual link can occur in this way then we say that the virtual link is *graphical*. In the article we shall prove that a virtual link  $L$  is graphical if and only if it is checkerboard colorable. On the other hand, we introduce a polynomial  $F[G]$  for signed cyclic graphs, which is defined via a deletion-marking recursion. We shall establish the relationship between  $F[G]$  of a signed cyclic graph  $G$  and the bracket polynomial of one of the virtual link diagrams associated with  $G$ . Finally we give a spanning subgraph expansion for  $F[G]$ . (Received February 05, 2018)