



Mathematics > Combinatorics

# Arrow ribbon graphs

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We introduce an additional structure on ribbon graphs, arrow structure. We extend the Bollob'as-Riordan polynomial to ribbon graph with this structure. The extended polynomial satisfies the contraction-deletion relations and naturally behaves with respect to the partial duality of ribbon graphs. We construct an arrow ribbon graph from a virtual link whose extended Bollob'as-Riordan polynomial specializes to the arrow polynomial of the virtual link recently introduced by H.Dye and L.Kauffman. This result generalizes the classical Thistlethwaite theorem to the arrow polynomial of virtual links.

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