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Injective Oriented Colourings

An emphoriented colouring of an oriented graph G is a colouring of the vertices of G with the property that if there exists an edge of G joining a vertex of colour i to a vertex of colour j, $i \neq j$, then no edge of G joins a vertex of colour j to a vertex of colour i. There are several possible definitions of an *injective* oriented colouring of G. One choice requires that no two in-neighbours of a vertex receive the same colour and no two out-neighbours receive the same colour. We study these colourings and the injective oriented chromatic number (primarily in the proper case) in terms of complexity, obstructions, critical graphs, cliques, products, and bounds.