

**Lemma 12.29** For the Markov chain represented by the graph  $G$  as shown, a nonempty atom  $A$  of  $\mathcal{F}_n$  is a Type I atom if and only if

$$\mathcal{N}_n \setminus U_A = \{l, l + 1, \dots, u\},$$

where  $1 \leq l \leq u \leq n$ , i.e., the indices of the set variables in  $A$  which are not complemented are consecutive.