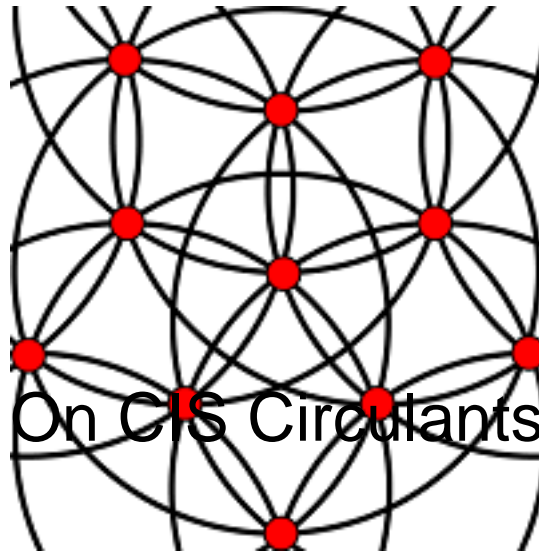


# CSASC 2013



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## On CIS Circulants

### Content :

A well-covered graph is a graph in which all maximal stable sets are of the same size, or in other words, they are all maximum. A CIS graph is a graph in which every maximal stable set and every maximal clique intersect. A circulant is a Cayley graph over a cyclic group.

It is not difficult to show that a circulant  $G$  is a CIS graph if and only if  $G$  and its complement  $\bar{G}$  are both well-covered and the product of the stability numbers of  $G$  and its complement equals the number of vertices. It is also easy to demonstrate that both families, the circulants and the CIS graphs, are closed with respect to the operations of taking the complement and lexicographic product.

We study the structure of the CIS circulants. It is well-known that all  $P_4$ -free graphs are CIS. In addition to the simple family of the  $P_4$ -free circulants, we construct a non-trivial sparse but infinite family of CIS circulants. We are not aware of any CIS circulant that could not be obtained from graphs in this family by the operations of taking the complement and lexicographic product.

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