On some classes of Deza graphs

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We consider only undirected graphs, without loops and multiple edges. Let \( \Gamma \) be a graph. We will consider the following generalization of strongly regular graphs. Let \( n, k, b \) and \( a \) be integers such that \( 0 \leq a \leq b \leq k < n \). A graph \( \Gamma \) is a Deza graph with parameters \((n, k, b, a)\) if

\( i \) \( \Gamma \) has exactly \( n \) vertices;

\( ii \) \( \Gamma(u, v) \) has exactly \( k \) vertices if \( u = v \), takes on one of two values \( b \) and \( a \) otherwise.

The only difference between a strongly regular graph and a Deza graph is that the size of \( \Gamma(u, v) \), does not necessarily depend on adjacences. These graphs were introduced in the article by Antoine and Michel Deza [1]. So we call these graphs as Deza graphs. A strictly Deza graph is a Deza graph which is not strongly regular and has diameter 2.

Significant results for a strictly Deza graphs have got by M. Erickson, S. Fernando, W.H. Haemers, W.H. Hardy, J. Hemmeter [2].

It is easy to see the complement of a strictly Deza graph is not necessary a Deza graph and not always has the diameter 2.

We consider some class of strictly Deza graphs according to the properties of their complement graphs.

References
