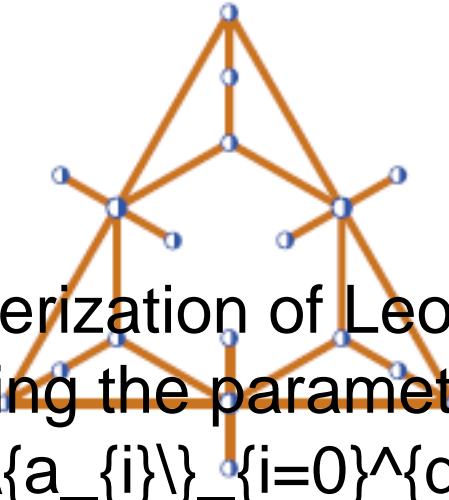


Bled'11 - 7th Slovenian International Conference on Graph Theory



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A characterization of Leonard pairs using the parameters $\{a_i\}_{i=0}^d$

Content :

Let V denote a vector space with finite positive dimension. We consider an ordered pair of linear transformations

$A: V \rightarrow V$ and $A^*: V \rightarrow V$ that satisfy (i) and (ii) below:

\begin{enumerate}

\item There exists a basis for V with respect to which the matrix representing A is irreducible tridiagonal and the matrix representing A^* is diagonal.

\item There exists a basis for V with respect to which the matrix representing A^* is irreducible tridiagonal and the matrix representing A is diagonal.

\end{enumerate}

We call such a pair a Leonard pair on V . Arlene Pascasio recently obtained a characterization of the Q -polynomial distance-regular graphs using the intersection numbers a_i . In this talk, we extend her results to a linear algebraic level and obtain a characterization of Leonard pairs. Pascasio's argument appears to rely on the underlying combinatorial assumptions, so we take a different approach that is algebraic in nature.

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