



SPECTRAL PROPERTIES OF FINITE-DIMENSIONAL WAVEGUIDE SYSTEMS*

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Abstract. This is a largely expository paper in which a finite dimensional model for gyroscopic/waveguiding systems is studied. Properties of the spectrum that play an important role when computing with such models are studied. The notion of “waveguide-type” is explored in this context. The main theorem provides a form of the central result (due to Abramov) concerning the existence of real spectrum for such systems. The roles of semisimple/defective eigenvalues are discussed, as well as the roles played by eigenvalue “types” (or “Krein signatures”). The theory is illustrated with examples.

Key words. Matrix polynomial, Waveguide, Eigenfunctions.

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