Christensen, Ole

Frames and pseudo-inverses. (English) Zbl 0845.47002

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A family $\{f_i\}_{i\in I}$ in an infinite-dimensional Hilbert space $\mathcal{H}$ is called a Bessel sequence if $\forall_{f\in\mathcal{H}} \sum_{i\in I} |\langle f, f_i\rangle|^2 < \infty$. A Bessel sequence $\{f_i\}_{i\in I}$ is called a frame if

$$\exists A > 0 : \ A|f|^2 \leq \sum_{i\in I} |\langle f, f_i\rangle|^2, \qquad \forall f \in \mathcal{H}.$$

There are studied connections between the frame theory and the theory of pseudo-inverse operators (i.e. Moore-Penrose inverses). According to the author, the frame theory is now a very useful tool in the wavelet theory.

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MSC:

47A05	General (adjoints, conjugates, products, inverses, domains, ranges, etc.)
47A30	Norms (inequalities, more than one norm, etc.) of linear operators
42C15	General harmonic expansions, frames

Keywords:

Bessel sequence; frame; pseudo-inverse operators; Moore-Penrose inverses; wavelet theory

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