

**Persistent Modules, their stability and some interactions with
Frame theory.**

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We present new type of interactions between stability properties of persistent homology and frame theory. Our new development takes into account the concept of stability of persistent modules, defined as a functors between the real line (viewed as a category constructed using its order relation) and the category of vector spaces. Both frame theory and persistent homology have crucial stability properties that we combine in a single conceptual setting. Some experiments illustrating the topological characterization of time-frequency analysis of audio signals are presented.