Rational Time-frequency Vector-valued Subspace Gabor Frames and Balian-Low Theorem

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This talk addresses vector-valued subspace Gabor frames with rational time-frequency product. By introduction of a suitable Zak transform matrix, we characterize vector-valued subspace Gabor frames, Riesz bases and orthonormal bases, and the uniqueness of Gabor duals of type I and type II. Using the uniqueness results, we extend the classical Balian-Low theorem to vector-valued subspace Gabor frames. We also point out Ron-Shen duality principle does not hold for a general vector-valued subspace Gabor frame.