Frames of iterations by bounded operators

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In this talk, we shall address the problem of the existence and properties of frames of iteration. By a frame of iteration, we mean a frame of the form $\{T^n v_i : i \in I, n \geq 0\}$, where T is a bounded operator on a Hilbert space $\mathcal{H}$, and $\{v_i\}_{i\in I}$ is an at most countable family in $\mathcal{H}$. On one hand, we shall discuss necessary and sufficient conditions for a bounded operator T to admit a frame of iteration. On the other hand, we shall study when a bounded operator T that admits a frame of iteration also admits a frame of iterations for its adjoint T^*. Furthermore, using universal models in vector Hardy spaces, given a frame of iterations for T, we shall construct a frame of iterations for its adjoint T^*. Finally, we characterize this frame of iterations and show its involutive nature.

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