Controlling and understanding dipolar Fermi gases of molecules

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Ultracold polar molecules offer unique possibilities in ultracold chemistry and quantum simulation. However, their complex internal structure poses significant challenges in controlling molecular collisions and evaporative cooling to quantum degeneracy. In this talk, I will review the status and challenges of cooling a Fermi gas of polar molecules for realizing and exploring exotic quantum phases such as p-wave superfluids and Bose-Einstein condensates of dipolar tetramers. In the end, I will show our progress in developing a compact dual-species setup for producing lithium-rubidium molecules.