Robust optimization emerged as one of the predominant paradigms to produce solutions that hedge against uncertainty. In order to obtain an even more realistic description of the underlying problem, where the decision maker can react to newly disclosed information, multistage models can be used. However, due to their computational difficulty, multistage problems beyond two stages have received less attention and are often only addressed using approximation rather than optimization schemes. Even less attention is paid to the consideration of decision-dependent uncertainty in a multistage setting.

In this talk, we pressent multistage robust optimization via quantified linear programs, which are linear programs with ordered variables that are either existentially or universally quantified. Building upon a (mostly) discrete setting where the uncertain parameters -- the universally quantified variables -- are only restricted by their bounds, we present an augmented version that allows stating the discrete uncertainty set via a linear constraint system that also can be affected by decision variables. We present a general search-based solution approach and introduce our solver Yasol that is able to deal with multistage robust linear discrete optimization problems, with final mixed-integer recourse actions and a discrete uncertainty set, which even can be decision-dependent.