Continuous-Time Deadbeat Observation Problem with Application to Predictive Control of Systems with Delay

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Abstract: A continuous-time deadbeat observation paradigm is discussed. Two observers are shown to estimate the state of a linear dynamic system deadbeatly in continuous time with respectively finite and infinite memory. Among other properties, BIBO-stability is proved for both structures. Based on the theory devised, deadbeat and asymptotic predictors for plants with delayed control are developed and shown to give rise to predictive feedback controllers assigning finite spectrum to the closed-loop system.