

SpicyPy: a common python tool for signal processing and control systems

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Within gravitational wave research community (including but not limited to LIGO-Virgo-KAGRA, Einstein Telescope and LISA collaborations) a lot of work in understanding and improving the detectors involves signal processing and modelling of control systems. Historically, different software tools were used for these purposes. We believe that it is possible to create a single software tool that can be useful for many different applications in these domains. This would help to facilitate exchange of knowledge between collaborations, and could be used in teaching.

We aim to develop a python package intended as a general tool with a simple but powerful interface to facilitate control systems modelling, signal processing, and provide an interface between the two. It may rely on other well-known and tested packages already used for these applications, but it will abstract interactions with them with a unified interface. Potential applications include time series analysis, suspensions modelling, feeding sensor signals through a control system, and more. The project is a collaborative open-source effort across the groups from the start, and new contributors are always welcome. We are currently focused on compiling software requirements specification and are in discussions with researches from different collaborations to understand the most common potential applications.

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