# Abstract submission CdD 2020, Laura Iacconi

**Abstract:** With an energy scale that can be as high as $10^{14}$ GeV, inflation may provide a unique probe of high-energy physics. Both scalar and tensor fluctuations generated during this early accelerated expansion contain crucial information about the particle content of the primordial universe. The advent of ground- and space-based interferometers enables us to probe primordial physics at length-scales much smaller than those corresponding to current CMB constraints. One key prediction of single-field slow-roll inflation is a red-tilted gravitational wave spectrum, currently inaccessible at interferometer scales. Therefore, interferometers probe directly inflationary physics that deviates from the minimal scenario and, in particular, additional particle content with sizeable couplings to the inflaton field. We adopt here an effective description for such fields and focus on the case of extra spin-2 fields. We find that a time-dependent sound speed for the extra modes can generate primordial gravitational waves with a blue-tilted spectrum, potentially at reach at interferometer scales. To define current exclusion limits on the parameter space, we combine bounds from the model inner consistency checks with those originating from (i) the upper limit on the tensor-to-scalar ratio $r$ at CMB scales (ii) ultracompact minihalos, (iii) primordial black holes, (iv) big bang nucleosynthesis, and (v) the Laser Interferometer Gravitational-Wave Observatory (LIGO). We explore the possibility of a detection by the Laser Interferometer Space Antenna (LISA) and its constraining power on this very general set-up.

**Key words:** Primordial cosmology, Beyond the Standard Model, Stochastic background