Contribution ID: **26** Type: **Poster**

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Thursday 4 April 2024 16:50 (2 hours)

Entangled Mach-Zehnder type Atom Interferometer in an optical, propagating-wave cavity In our experiment, an optical, propagating wave cavity mediates entanglement of the atomic ensemble and it supports the Raman beam splitter operation, while keeping the atoms trapped during the whole interferometer sequence. We present the experimental parameters of the cavity that enable the generation of an atomic spin-squeezed state and the mapping of this entanglement onto the arms of the Mach-Zehnder via a state-dependent momentum kick. Furthermore, we demonstrate the dipole trap generated by the cavity and we discuss how AC-stark shifts will be compensated by a weak blue-detuned auxiliary potential.

Session Classification: Poster Session & Wine & Coffee