

# Twisting asymptotically-flat spacetimes

*Marc Geiller*

*Centre national de la recherche scientifique*

I will present the detailed construction of an extension of the Bondi framework which includes a non-vanishing twist, i.e. the relaxation of the hyperspace-orthogonality condition. This extension has several advantages which have been noted in recent work. First, it allows to access a Carroll-covariant structure on  $\mathcal{Scri}$ . Second, and most importantly, the presence of a non-vanishing twist allows to write all the algebraically special solutions in finite form.

This includes for example Kerr or supertranslated Schwarzschild, which would otherwise require an infinite  $1/r$  expansion when written in the standard non-twisting Bondi gauge. This opens the possibility of defining symplectic symmetries for these algebraically special solutions. The construction of the algebraically general solutions near null infinity requires the use of a combination of the Newman-Penrose and metric formalisms, which will be presented in detail.