

SEMINARIO DI GEOMETRIA

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@ Dipartimento di scienze Matematiche, Politecnico di Torino,
via Duca degli Abruzzi 24
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Normal holonomy and the nullity distribution of a submanifold of a space form

If M is a submanifold of a space form, the nullity subspace N_p of the second fundamental form at p is the common kernel of the shape operators, and its dimension is called the index of relative nullity. The map $p \rightarrow N_p$ defines an autoparallel distribution on a suitable open and dense subset of M all whose leaves are totally geodesic in the ambient space. The nullity distribution arises naturally in many problems involving submanifold geometry since it is the kernel of the Gauss map, and it has been largely studied. We will present some tools of the theory of normal holonomy to give a local description of any submanifold in terms of its nullity distribution. We will also prove that if M is a complete, irreducible submanifold of the Euclidean space or the sphere with constant index of relative nullity, any two points can be joined by a curve always perpendicular to the nullity distribution.