Linearization of Lagrangian webs

Michel Nguiffo Boyom

Let M be a 2m dimensional connected differentiable manifold. Given a positive integer k, a k-web in M consists of k m-codimensional foliations $F_1, .., F_k$ which are pairwise transverse. Let (U, ϕ) be a local chart whose domain U contains the point p. The leaf of F_j through p is denoted by $F_j(p)$ and the submanifold $\phi(F_j(p) \cap U)$ is denoted by $S_j(p)$. Let $V_j = d\phi(p)(T_pF_j(p))$. We say that the web $W = F_1, .., F_{2m}$ is linearizable at the point p if there exists a local chart (U, ϕ) such that $S_j(p)$ is included in V_j. One of the exciting problem of the theory of webs is the linearization problem. Suppose that (M, ω) is a 2m-dimensional symplectic manifold. A k-web $W = (F_1, .., F_k)$ is called a lagrangian web if all of the foliations F_j are lagrangian foliations. I shall be interested in a special type of homogeneous symplectic manifolds admitting simply transitive completely solvable Lie group of symplectomorphisms. The central theorem asserts that if such a symplectic manifold (M, ω) admits an adapted integrable almost complex structure (M, J) then (M, ω) admits a locally linearizable lagrangian k-web for every positive integer k.