Partially hyperbolic diffeomorphisms and lagrangean-contact structures in dimension three

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Whereas numerous examples of partially hyperbolic diffeomorphisms are known in dimension three, we know very few examples of them having smooth stable and unstable distributions. The rigidity of this situation relies on the smooth geometric structure (E^s, E^u), which happens to be a *rigid geometric structure* in dimension three if the sum $E^s \oplus E^u$ is a contact distribution. In this case, (E^s, E^u) is called a *lagrangean-contact structure*, and in this talk, we will introduce these structures, and adress the question of the interaction between lagrangean-contact structures and partially hyperbolic diffeomorphisms in dimension three. We will present some progresses made on the study of this question, with an emphasis on the new problems that it raises, and on the specific tools adapted to this situation.