

# Neurogeometry of vision and sub-Riemannian geometry

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The talk will be devoted to the following questions:

- Image inpainting
- The pinwheel model of the primary visual cortex V1 of a human brain,
- Sub-Riemannian problem on the group of rototranslations of a plane and its solution,
- Image inpainting via sub-Riemannian length minimizers,
- Curve cusplless reconstruction,
- Image inpainting via hypoelliptic diffusion.

## References

- [P1] J. Petitot, *The neurogeometry of pinwheels as a sub-Riemannian contact structure*, J. Physiology - Paris, **97** (2003), 265–309.
- [P2] J. Petitot, *Neurogeometrie de la vision — Modeles mathematiques et physiques des architectures fonctionnelles*, (2008), Editions de l'Ecole Polytechnique.
- [S1] Yuri L. Sachkov and Igor Moiseev, *Maxwell strata in sub-Riemannian problem on the group of motions of a plane*, ESAIM: COCV, **16** (2010), 380–399.
- [S2] Yuri L. Sachkov, *Conjugate and cut time in the sub-Riemannian problem on the group of motions of a plane*, ESAIM: COCV, **16** (2010), 1018–1039.
- [S3] Yuri L. Sachkov, *Cut locus and optimal synthesis in the sub-Riemannian problem on the group of motions of a plane*, ESAIM: COCV, **17** (2011), 293–321.