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REGULARIZATION BY CONVOLUTION AND SMOOTHING OF PIECEWISE
SMOOTH VECTOR FIELDS

I will present a joint work with C. Buzzi and P.R. Silva, in which we study a general regularization procedure for piecewise smooth vector fields whose discontinuity locus is a variety of normal crossings type. We show that such regularization can be smoothed through a finite sequence of blowings-up, thereby reducing the problem to study of the dynamics of a smooth vector field in a manifold with corners. I will illustrate the procedure in the specific case of a piecewise constant planar vector field in \mathbb{R}^2 with discontinuity locus $xy = 0$: in this case, we generically obtain a Bogdanov-Takens bifurcation in the blowing-up locus.