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Flatness and singularities of local models

In order to study the local structure of the special fibre of a PEL-Shimura variety with parahoric level structure, it is useful to work with the local model which is defined purely in terms of linear algebra. We will show that in certain cases the local model, and thus the corresponding model of the Shimura variety, is flat. Furthermore we make some remarks on the singularities occurring in the special fibre. The main tool is to embed the special fibre of the local model into the affine flag variety, and to identify it with a union of Schubert varieties via the technique of Frobenius splittings.