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A Fokker-Planck collision model for gyrokinetic simulations in stellarators ALEXANDER VON BOETTICHER, MICHAEL BARNES, University of Oxford — We describe an implementation of the gyrokinetic linearised Fokker-Planck collision operator that satisfies pertinent conservation laws and is valid at arbitrary collisionalities. The differential test-particle component of the operator is exact; the implementation of the integro-differential field-particle component relies on the spherical harmonic and Laguerre polynomial expansion introduced by Hirshman and Sigmar [S. P. Hirshman, D. J. Sigmar, Phys. Fluids **19**, 1532 (1976)]. Properties and numerical methods of the implementation in the δf-gyrokinetic code `stella` [M. Barnes, F. I. Parra, M. Landreman, arXiv:1806.02162] are discussed, and benchmarks against the collision model of the gyrokinetic solver GS2 are provided. Preliminary results of collisional gyrokinetic simulations of microinstabilities in the Wendelstein-7X stellarator are also presented.

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