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Peter Sin* (sin@ufl.edu). *Weyl modules, simple modules and invariants of incidence maps.*

We report on some recent results. In work with O. Arslan, the structures of certain "classical" Weyl modules have been determined for all characteristics and the results have been applied to solve problems posed by Moorhouse on incidence matrices from projective geometry over finite fields. In work with A. Brouwer and J. Ducey, the invariant factors of the incidence matrix for skew lines in a finite 3D-space have been determined. A common theme is that computations are done over a p -adic ring rather than in characteristic p . (Received January 05, 2012)