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BIBDs That Almost Have Locally Equitable Colourings

In this talk, we analyze ℓ -colourings of (v, k, λ) -BIBDs where within each block, one colour is absent and the rest appear $\frac{k}{\ell-1}$ times. We give necessary conditions for such colourings to exist. We show how Hadamard matrices, affine planes, and twin prime powers can be used to construct such coloured BIBDs.