PETER DANZIGER, Toronto Metropolitan University

Colouring Kirkman triple systems

A weak δ-colouring of a block design is an assignment of δ colours to the point set so that no block is monochromatic. The *weak chromatic number* $\chi(S)$ of a block design S is the smallest integer δ such that S has a weak δ-colouring. It has previously been shown that any Steiner Triple System has weak chromatic number at least 3 and that for each $v \equiv 1$ or $3 \pmod 6$ there exists a Steiner triple system on v points that has weak chromatic number 3. Moreover, for each integer $\delta \geq 3$ there exist infinitely many Steiner triple systems with weak chromatic number δ.

In this talk we consider colourings of the subclass of Steiner triple systems which are resolvable, namely Kirkman Triple Systems. We show that for each $v \equiv 3 \pmod 6$ there exists a Kirkman Triple System on v points with weak chromatic number 3. We also show that for each integer $\delta \geq 3$, there exist infinitely many Kirkman triple systems with weak chromatic number δ.