

1046-83-1151      **George Sparling\*** (gnilraps@gmail.com). *New ideas in space-time: Cartan's ODE's, parabolic geometry and conformal structures.*

I will describe recent work of Boris Doubrov, Jonathan Holland and myself, showing how Cartan's classic work on the equivalence problem for ordinary differential equations may be applied to the study of space-time. The overall aim here is to gain new insight into the structure of the Einstein vacuum equations, generalizing the twistor theory of Penrose to the non-self-dual case. (Received September 14, 2008)