1014-13-1390 **H E A Eddy Campbell*** (eddy@mun.ca), A2021, Memorial University, St John's, NL A1C 5S7, Canada. *The Decomposition Series Conjecture.*

Let V be a vector space of dimension n over a field $\mathbf{F}$ of characteristic $p > 0$. Let G be a subgroup of $Gl(V)$ of order a power of p.

We are interested in the structure of the ring of invariants of $\mathbf{F}[V]^G$: when is this ring Cohen-Macaulay? Gorenstein? a complete intersection algebra? a hyper-surface? a polynomial ring?

The decomposition series conjecture is as follows: $\mathbf{F}[V]^G$ has one of the five structures just listed if and only if there exists a decomposition series for G, $G_0 = \{e\} \subset G_1 = C_p \subset \cdots \subset G_r = G$, with the property that $\mathbf{F}[V]^{G_\ell}$ has the same property for each ℓ. (Received September 28, 2005)