1032-35-159 **Vladimir Novikov*** (V.Novikov@lboro.ac.uk), Loughborough, Leicesters LE11 3TU, England, **Alexander Mikhailov** (sashamik@maths.leeds.ac.uk), Leeds, England, and **Jing Ping Wang** (J.Wang@kent.ac.uk), Canterbury, Kent CT2 7NF, England. *On the structure of systems of integrable equations.* Preliminary report.

We study systems of evolutionary odd order equations

$$\begin{cases} u_t = \lambda_1 u_n + F_1(u_{n-1}, v_{n-1}, \dots, u_0, v_0) \\ v_t = \lambda_2 v_n + F_2(u_{n-1}, v_{n-1}, \dots, u_0, v_0). \end{cases}$$

where $u_k := \partial_x^k(u)$, $v_k := \partial_x^k(v)$, $n \in 2\mathbb{N}+1$ and $\lambda_{1,2} \in \mathbb{C} \setminus \{0\}$, which possess infiite hierarchies of local symmetries. We formulate a number of conditions on the right hand side of the system which are necessary for existence of an infinite sequence of local symmetries.

We show that the requirement of existence of an infinite hierarchy of commuting flows imposes tight constraints on possible dispersion laws of the system. The dispersion law of an integrable system carries important information on the structure of hidden symmetries and conservation laws. To determine possible dispersion laws for integrable systems is an important and far non-trivial problem. (Received August 20, 2007)