1056-34-425 **Imran Naeem*** (inqau@yahoo.com), Opposite sector U, DHA Lahore cantt, Lahore, Punjab 54792, Pakistan, **Fazal Mahomed** (Fazal.Mahomed@wits.ac.za), School of CAM, University of the, Witwatersrand, Johannesburg, Gauetng 2050, South Africa, and **R Naz** (rehananaz_qau@yahoo.com), LUMS, Pakistan, Lahore, Punjab 54792, Pakistan. *First Integrals for Systems via Complex Partial Lagrangians.*

The partial Noether operators and partial Euler-Lagrange equations are developed for a single as well as for a system of kth-order ordinary differential equations (ODEs) in the complex domain with the help of complex partial Lagrangians. A complex partial Noether theorem is deduced and the formula which provides the complex rst integral is equivalent to the complex Noether integral. These complex partial Noether operators, in general, are not complex symmetries of systems of complex ODEs and they are not closed. The theorems are provided which give the condition of closure and when they become complex symmetry generators is also stated. The results obtained in the complex domain are decomposed into the real domain for system of m second-order complex ODEs with m dependent variables. The complex partial Lagrangian splits into two real partial Lagarangians which satisfy partial Euler-Lagrange equations in the real domain. Each complex partial Noether operator yields two real partial Noether operators of the real partial Lagrangians. The complex first integrals result in two real rst integrals for the system of ODEs split in the real domain. (Received September 06, 2009)