

# Natural Spaces for Kinetic Systems and Integral Equations

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**Monday, April 18, 2011  
4:00-5:00pm  
Peirce 220**

## ***Abstract***

*We consider kinetic equations in the form of infinite-dimensional dynamic systems or partial integro-differential equations which have unbounded linear operators. Using the adjoint equations approach, we construct functional spaces which are generated by the original equations and in which we are able to prove existence and uniqueness theorem. Moreover, these spaces turn out to be physically relevant and they are called natural spaces. This approach enables to construct the well-posedness theory for some classes of problems. The examples include the fragmentation equations, moment-like chains of equations arising in the theory of scalar conservation laws, and Bogolyubov hierarchy*