1032-14-76 **Junmyeong Jang*** (jang3@math.purdue.edu), Department of Mathematics, Purdue University, 150 N. University Street, West Lafayette, IN. *Generic ordinarity of semi-stable fibrations.*

Let X be a smooth proper surface over a field k which admits a semi-stable fibration, $\pi : X \to C$, to a smooth proper curve C over k. If the characteristic of k is 0, $R^1\pi_*\mathcal{O}_X$ does not have a subbundle of positive degree. In other words, all the Harder-Narasimhan slopes of $R^1\pi_*\mathcal{O}_X$ are non-positive. But if the characteristic of k is $p > 0$, the this does not hold. In this talk, I will give the semi-positivity theorem and some other results the base field k is perfect of positive characteristic provided some conditions of Frobenius morphism on the generic fiber. Using this result, we may construct a counterexample of Parshin's expectation. Parshin gave an expectation that a surface of general type satisfies the Miyaoka-Yau inequality if the Picard scheme is smooth. We will prove, for a generically ordinary smooth fibration, the smoothness of the Picard scheme of the fibered surface is preserved under the Frobenius base change. Using this together a result of Szpiro and a reduction argument, we will construct a counterexample to Parshin's expectation. (Received August 16, 2007)