1077-11-1592   **Shahed Sharif*** (`ssharif@csusm.edu`), Dept. of Mathematics, CSU San Marcos, 333 S. Twin Oaks Valley Road, San Marcos, CA 92096. *A descent map for curves with totally degenerate semi-stable reduction.*

Given a suitably nice algebraic curve C defined over a nonarchimedean local field with residue characteristic p, such that C has totally degenerate semi-stable reduction, the reduction of the Jacobian J of C is known to be an extension of a finite group by an arithmetic torus. Using arithmetic on the special fiber of C, we show how to compute the group of rational torsion points on J with prime-to-p order, and determine the rationality of theta characteristics and higher spin structures on C. As an example, we will consider a family of nonhyperelliptic genus 4 curves. (Received September 20, 2011)