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On double coverings of a pointed non-singular curve with any Weierstrass semigroup. (English) [Zbl 1154.14023](#)

Tsukuba J. Math. 31, No. 1, 205-215 (2007).

Let H be the Weierstrass semigroup of a point P of a genus g complete non-singular curve C . In the paper under review, given an odd positive integer n satisfying certain conditions, the authors construct a double covering $\pi : \tilde{C} \rightarrow C$ with a ramification point \tilde{P} lying over P such that the genus of the curve \tilde{C} is $2g + (n - 1)/2$ and the Weierstrass semigroup of \tilde{P} is $H_n = 2H + n\mathbb{N}$, where \mathbb{N} is the set of non-negative integers. By giving bounds for the weight of the Weierstrass semigroup of some ramification point F . *Torres* [*Manuscr. Math.* 83, No. 1, 39–58 (1994; [Zbl 0838.14025](#))] obtained a characterization of double coverings of the curve C .

In the case that 3 and 6 are respectively the smallest positive integers of H and H_n the authors describe necessary and sufficient conditions for H_n be the Weierstrass semigroup of a total ramification point of a cyclic covering of the projective line. In particular they conclude that the semigroup generated by 6, 8, 10 and $2g - 7$ is cyclic if and only if $g \equiv 2 \pmod{3}$. Explicit examples of non-singular curve realizing this semigroup was given by *A. Garcia* [*Manuscr. Math.* 55, 419–432 (1986; [Zbl 0603.14014](#))] and in the opposite case by *G. Oliveira* and *F. L. R. Pimentel* [*Semigroup Forum* 77, No. 2, 152–162 (2008; [Zbl 1161.14023](#))].

Reviewer: José Gilvan de Oliveira (Vitória)

MSC:

[14H55](#) Riemann surfaces; Weierstrass points; gap sequences

[14H30](#) Coverings of curves, fundamental group

[14C20](#) Divisors, linear systems, invertible sheaves

Cited in **3** Documents

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Weierstrass semigroup; double covering; cyclic covering

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