A genus 2 curve $C$ has an elliptic subcover if there exists a degree $n$ maximal covering $\psi : C \to E$ to an elliptic curve $E$. Degree $n$ elliptic subcovers occur in pairs $(E, E')$. The Jacobian $J_C$ of $C$ is isogenous of degree $n^2$ to the product $E \times E'$. We say that $J_C$ is $(n, n)$-split. The locus of $C$, denoted by $\mathcal{L}_n$, is an algebraic subvariety of the moduli space $\mathcal{M}_2$.

We give a brief description of the spaces $\mathcal{L}_n$ for a general $n$ and then focus on small $n$. We describe some of the computational details how to compute explicitly the space $\mathcal{L}_n$. Furthermore, we explicitly describe the relation between the elliptic subcovers $E$ and $E'$. We have implemented most of these relations in computer programs which check easily whether a genus 2 curve has $(2, 2)$ or $(3, 3)$ split Jacobian. In each case the elliptic subcovers can be explicitly computed. (Received September 10, 2008)