

On Painlevé's third equation

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Painlevé's third equation may sometimes have multi-valued solutions due to a singularity at the origin. It has been believed that a modified equation, obtained by a change of variables, has the property that all local solutions can be analytically continued to single-valued meromorphic functions in the plane. A rigorous proof for this statement has now been given by Ilpo Laine and the speaker. The proof will be outlined in this talk. The same property had previously been proved for the (unmodified) first and second Painlevé equations by Laine and the speaker, and for the fourth equation by Norbert Steinmetz.