Connectivity of Julia sets of meromorphic maps with Baker domains

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In this talk we show that if a meromorphic transcendental map has a multiply connected Baker domain, then it must also have at least one weakly repelling fixed point (i.e. repelling or with derivative equal to one). This was the last remaining case in the proof of the following result (which was proven by Shishikura for rational maps): If f is a meromorphic transcendental map with a disconnected Julia set, then f has a weakly repelling fixed point. The historical motivation of this theorem was its corollary, namely that the Julia set of Newton's method of every entire map is connected or, equivalently, all its Fatou components are simply connected. To prove this theorem we use a result explained in Núria Fagella's talk, which shows the existence of absorbing regions in Baker domains, a question which has been open for some time.