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Symplectic Barriers

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In his seminal 2001 paper, Biran introduced the concept of Lagrangian Barriers, a symplectic rigidity phenomenon coming from obligatory intersections with Lagrangian submanifolds which doesn't come from mere topology.

One simple example is that when removing a Lagrangian plane from the four dimensional ball, the symplectic capacity shrinks down to half of the original capacity of the ball.

Considering this example for a Lagrangian barrier, we ask how would the capacity change if one removes a plane which is not necessarily Lagrangian, or several such planes.

We show that indeed there are non-trivial obstructions which give the first example (as far as we know) of Symplectic Barriers: obligatory intersections of symplectic embeddings with symplectic submanifolds.

This is a joint work with Richard Hind and Yaron Ostrover.

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