$$S_t \circ c(h)(a_s)_{ti} c(s) + \mathfrak{S}_e m^i n(a_r)$$

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Hot–Spots for Conditioned Brownian Motion

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Let D be a bounded domain in the plane which is symmetric and convex with respect to both coordinate axes. We prove that the Brownian motion conditioned to remain forever in D, the Doob–h process of the ground state Dirichlet eigenfunction in D, has the "hot-spots" property. That is, the first non-constant eigenfunction corresponding to the semigroup of this process (with its nodal line on one of the coordinate axes) attains its maximum and minimum on the boundary and only on the boundary of the domain. This is the exact analogue for conditioned Brownian motion of the result of D. Jerison and N. Nadirashvili for the Neumann eigenfunction. This result follows from similar "hot–spots" results for survival time probabilities for the killed Brownian motion in D. The techniques here are based on multiple integrals "à la" Brascamp–Lieb–Luttinger and are completely different than those used for the Nemann problem.