1041-60-208 **Steven P Lalley*** (lalley@galton.uchicago.edu), Department of Statistics, University of Chicago, 5734 S. University Avenue, Chicago, IL 60637, and **Xinghua Zheng** (xhzheng@uchicago.edu), Department of Statistics, University of Chicago, 5734 S. University Avenue, Chicago, IL 60637. *Spatial Epidemics and Local Times for Critical Branching Random Walks in Dimensions 2 and 3.*

The behavior at criticality of spatial *SIR* (susceptible/infected/recovered) epidemic models in dimensions two and three is investigated. In these models, finite populations of size N are situated at the sites of the integer lattice, and infectious contacts are limited to individuals at the same or at neighboring sites. Susceptible individuals, once infected, remain contagious for one unit of time and then recover, after which they are immune to further infection. It is shown that the measure-valued processes associated with these epidemics, suitably scaled, converge, in the large-N limit, either to a standard Dawson-Watanabe process (super- Brownian motion) or to a Dawson-Watanabe process with density-dependent killing, depending on the size of the the initially infected set. A key step in the proof is to show that the local time processes associated with branching random walks converge to the local time density process associated with the limiting super-Brownian motion, establishing a conjecture of Adler. (Received August 11, 2008)