GROMOV-HAUSDORFF-PROKHOROV CONVERGENCE OF VERTEX CUT-TREES OF N-LEAF GALTON-WATSON TREES

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Abstract: we study the vertex cut-tree of Galton-Watson trees conditioned to have n leaves. This notion is a slight variation of Dieuleveut's vertex cut-tree of Galton-Watson trees conditioned to have n vertices. Our main result is a joint Gromov-Hausdorff-Prokhorov convergence in the finite variance case of the Galton-Watson tree and its vertex cut-tree to Bertoin and Miermont's joint distribution of the Brownian CRT and its cut-tree. The methods also apply to the infinite variance case, but the problem to strengthen Dieuleveut's and Bertoin and Miermont's Gromov-Prokhorov convergence to Gromov-Hausdorff-Prokhorov remains open for their models conditioned to have n vertices.