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This manuscript was compiled on 27 de noviembre de 2021

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Figure

fig:frog

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¹ Todos los autores contribuyeron a este trabajo por igual.

² Trabajo presentado para el curso de Simulación (EST-24107) impartido por Jorge Francisco de la Vega Góngora. E-mail: jorge.delavegagongora@gmail.com



Fig. 1. Placeholder image of a frog with a long example caption to show justification settina.

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To allow an equation to span both columns, options are to use the \begin{figure*}...\end{figure*} environment mentioned above for figures, or to use the \begin{widetext}...\end{widetext} environment as shown in equation

eqn: example

below.

Please note that this option may run into problems with floats and footnotes, as mentioned in the cuted package documentation. In the case of problems with footnotes, it may be possible to correct the situation using commands \footnotemark and \footnotetext.

$$(x+y)^{3} = (x+y)(x+y)^{2}$$
$$= (x+y)(x^{2} + 2xy + y^{2})$$
$$= x^{3} + 3x^{2}y + 3xy^{3} + x^{3}.$$

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- Belkin M, Niyogi P (2002) Using manifold stucture for partially labeled classification. Advances in Neural Information Processing Systems, pp 929-936.
- 2. Bérard P, Besson G, Gallot S (1994) Embedding riemannian manifolds by their heat kernel. Geometric & Functional Analysis GAFA 4(4):373-398.
- 3. Coifman RR, et al. (2005) Geometric diffusions as a tool for harmonic analysis and structure definition of data: Diffusion maps. Proceedings of the National Academy of Sciences of the United States of America 102(21):7426-7431.