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# A Simple L<sup>A</sup>T<sub>E</sub>X Template

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Cunxin Huang <sup>\*</sup>

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## **Abstract**

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This is an example.

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**Keywords:** Keyword1, Keyword2, Keyword3, Keyword4, Keyword5

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## 1 Example section 1

~~(defexample)~~ **Definition 1.1.** This is an example definition.

~~(th:example)~~ **Theorem 1.1.** *This is an example theorem.*

10 **Proof.** This is the proof for Theorem 1.1.

11 Recall Definition 1.1.

12 The proof is complete. □

~~prop:example~~? **Proposition 1.1.** *This is an example proposition.*

14 **Proof.** According to [1, Theorem 3.14], we have

$$15 \quad e^{i\pi} + 1 = 0. \quad (1.1) \boxed{\text{eq:euler}}$$

16 This completes the proof. □

~~coro:example~~? **Corollary 1.1.** *This is an example corollary.*

**Proof.** Due to equation (1.1),

$$e^{i\pi} = -1,$$

18 which finishes the proof. □

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\*Department of Applied Mathematics, The Hong Kong Polytechnic University, Hong Kong, China  
(huangcunxin@outlook.com).

19 **2 Example section 2**

`sec:example2`? To continue the discussion in Section 1, we first recall Algorithm 6.18 in [2].

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**Algorithm 2.1** An example algorithm

`(alg:example)?` Input  $x_0 \in \mathbb{R}^n$ ,  $\rho_0 > 0$ ,  $\eta_1 \geq 1 > \eta_2 > 0$ . For  $k = 0, 1, 2, \dots$ , do the following.

1. Choose a set of nonzero vectors  $D_k \subset \mathbb{R}^n$  (deterministically or stochastically).
  2. Check whether there exists a  $y_k \in \{x_k + \rho_k d : d \in D_k\}$  such that  $f(y_k) < f(x_k)$ .
  3. If  $y_k$  exists, set  $x_{k+1} = y_k$ ,  $\rho_{k+1} = \eta_1 \rho_k$ ; otherwise, set  $x_{k+1} = x_k$ ,  $\rho_{k+1} = \eta_2 \rho_k$ .
  4. If a certain stopping criterion is met, exit and output  $x_{k+1}$ .
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21 **References**

- `Jordan_1874` [1] C. Jordan. Mémoire sur les formes bilinéaires. *J. Math. Pures Appl.*, 19:35–54, 1874.  
`then_Bau_1997` [2] L. N. Trefethen and D. Bau III. *Numerical Linear Algebra*. SIAM, Philadelphia, 1997.