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## **Switched loop antenna for RFID localization**

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# Switched Loop Antenna for RFID Localization

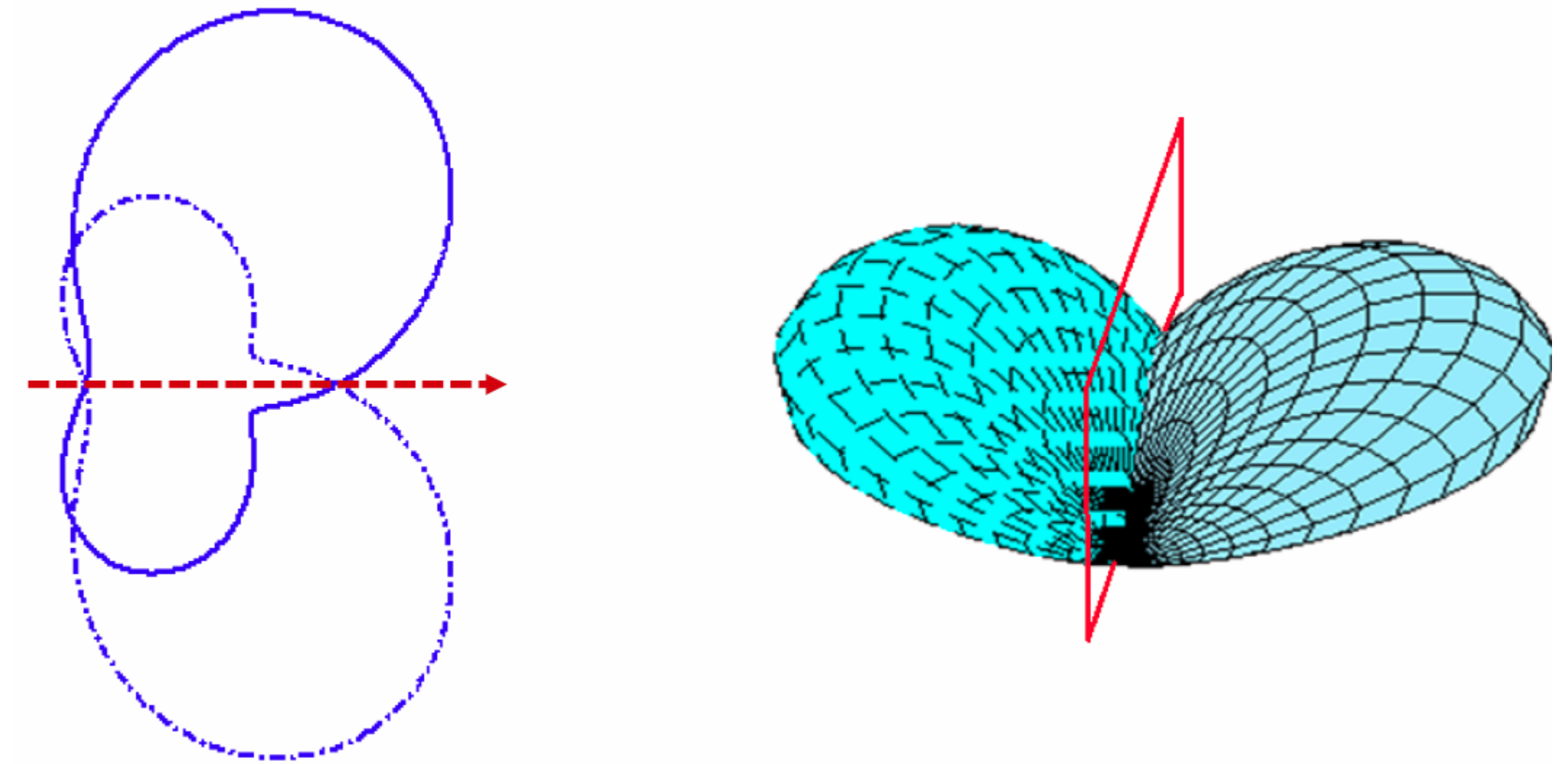
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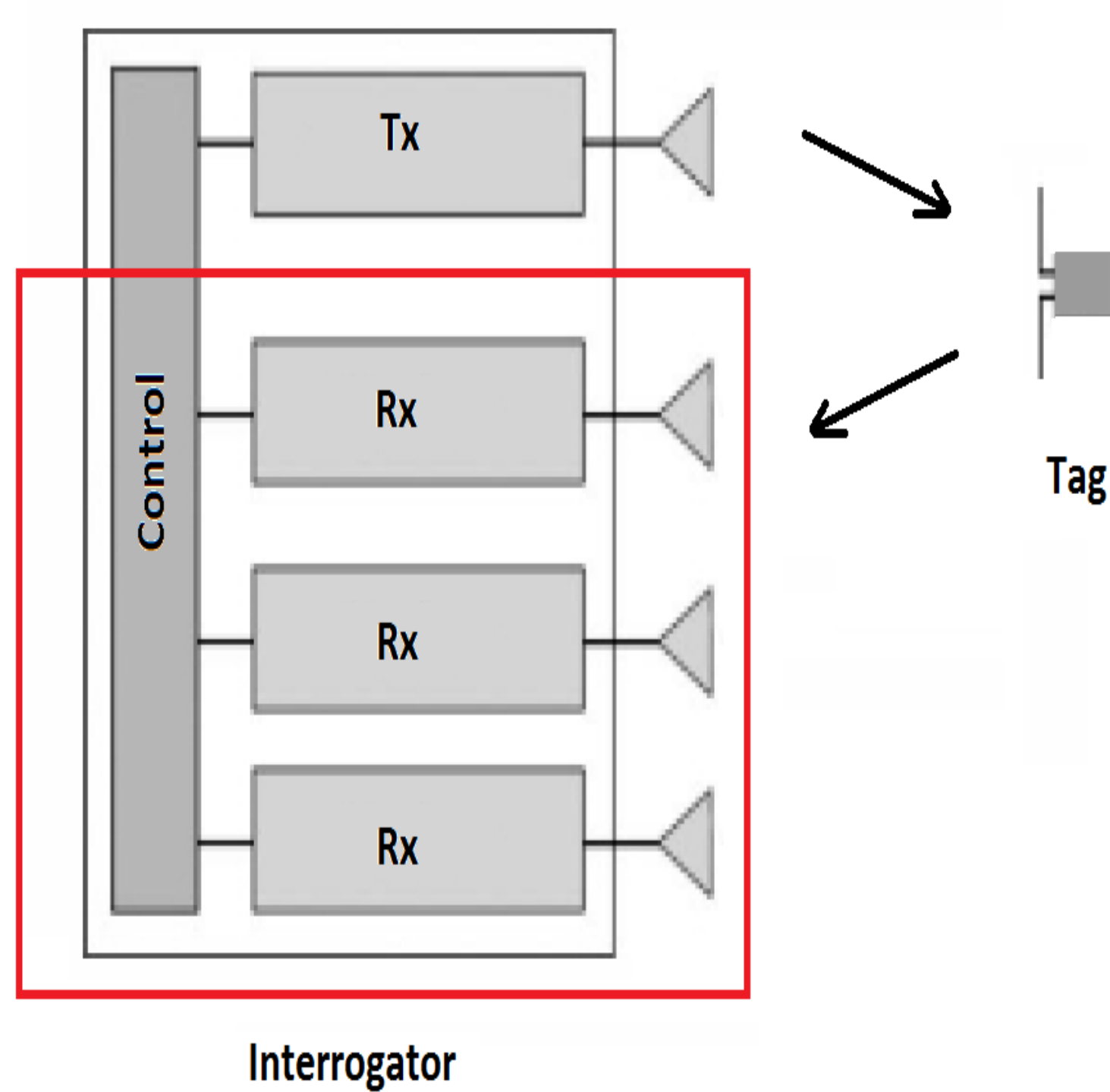
## Introduction

- The poster suggests an approach for localizing tagged items by equipping the RFID tag with a low-complexity switched loop antenna.
- By controlling the polarity of a DC source sharing the RF path with the input signal, different beampatterns are triggered and different spatial responses are thus observed by the RFID reader.
- The different spatial signatures allow the RFID reader to estimate the direction of the tag with a single receive antenna at the reader's side.

## Far-Field



## State of the Art



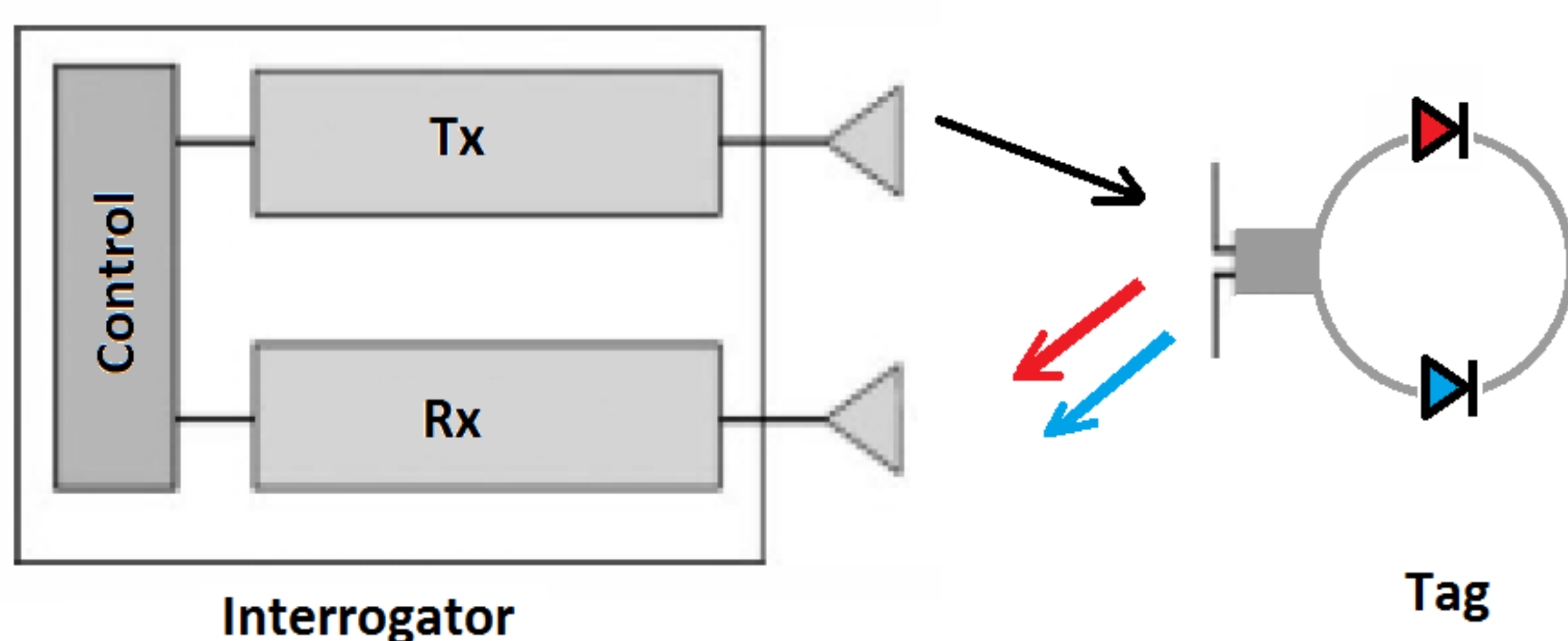
## Far-Field, ctd'

$B_1(\Omega)$  and  $B_2(\Omega)$  are weakly correlated beams

They are balanced (in the uniform 3D space) as forming a mirror-image pair

Thus, they are able to trigger two i.i.d. channel responses to be exploited by the RFID reader.

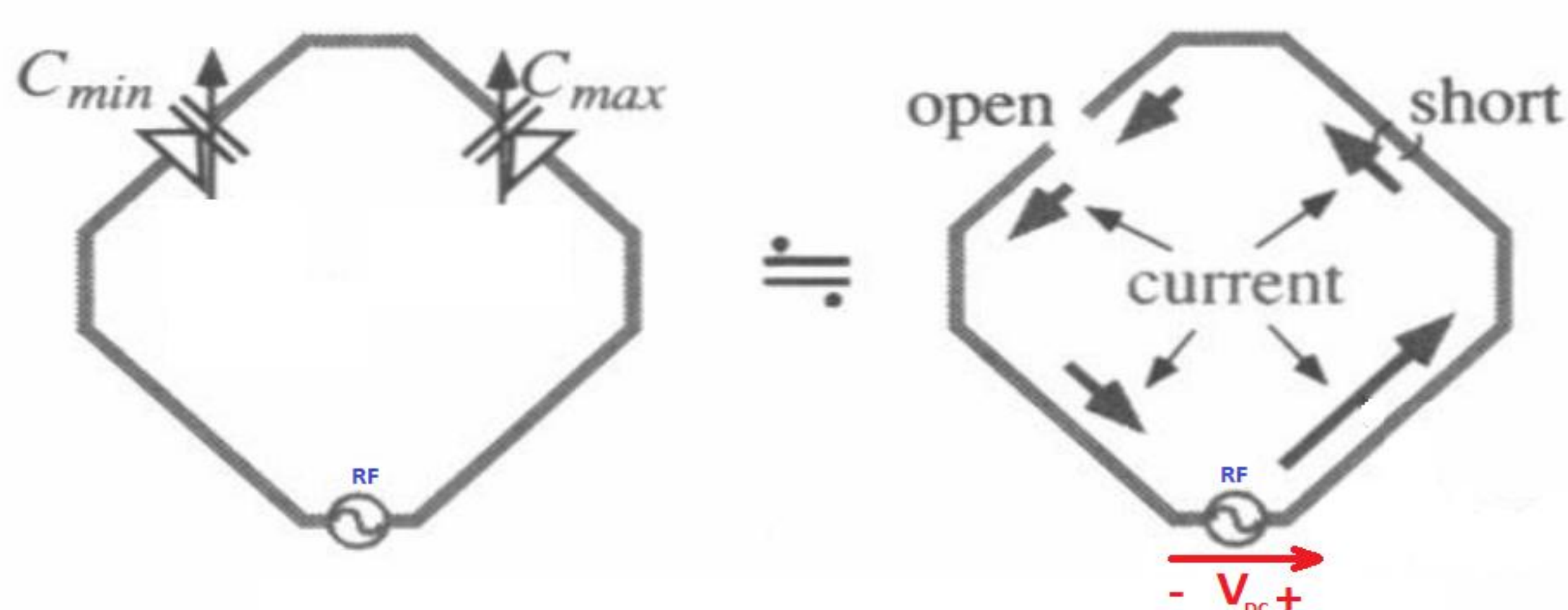
## Proposed System



## Conclusion

By equipping the RFID tag with a simple switched loop antenna, the direction of the tag can be estimated using a single receive antenna at the reader's side. This in turn helps future integration of RFID readers in consumer handheld terminals like future smartphones.

## Proposed System, ctd'



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