Re: positive definite functions

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- *From*: "Robert Israel" <israel@xxxxxxxxxxx>
- *Date*: 8 Aug 2005 15:24:29 −0700

David C. Ullrich wrote:
> On 8 Aug 2005 06:41:50 GMT, israel@xxxxxxxxxxx (Robert Israel) wrote:
>
> >In article <john.lord−3786F5.16274706082005@xxxxxxxxxxxxxx>,
> >john f. lord <john.lord@xxxxxxxxxxxx> wrote:
> >>In article <soj6f119lvfg6h7mqg2q4fdmnsei2k1aq8@xxxxxxx>,
> >> David C. Ullrich <ullrich@xxxxxxxxxxxxxxxx> wrote:
> > >
> > >>> Anyway, the interesting thing here is Bochner's theorem: A function
> > >>> on R is the Fourier transform of a Borel probability measure _if and
> > >>> only if_ it's continuous, positive definite and equals 1 at the
> > >>> origin. (Similarly in more general settings, for example locally
> > >>> compact abelian groups at least.)
> > >
> > >>Now what my question was meant to be: are there ways to verify (at least
> > >>for some classes of functions) if a function is positive definite,
> > >>without calculation of its Fourier transform or of the determinants in
> > >>the definition of positive−definiteness, as both in general are
> > >>prohibitively complicated?
> > >
> > >In some cases, yes. For example, any "autocorrelation" function of the form
> > >f(x) = int_{−infty}^infty g(t+x) conjugate(g(t)) dt (where g is square−integrable)
> > >is positive definite.
> >
> > Given f, how do you tell whether there exists such a g?

In general, you don't (unless by calculating the Fourier transform).
What
I meant was that f might be initially given in this form, or as a sum
of functions of this form.

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- ***References***:
  - ***positive definite functions***
    - *From:* john f. lord
  - ***Re: positive definite functions***
    - *From:* Dave Rusin
  - ***Re: positive definite functions***
    - *From:* David C . Ullrich
  - ***Re: positive definite functions***
    - *From:* john f. lord
  - ***Re: positive definite functions***
    - *From:* Robert Israel
  - ***Re: positive definite functions***
    - *From:* David C . Ullrich

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