My Bibliography Maker

L.B. Wilson III,[1]

This is the abstract part of the paper...

1. Introduction

Collisionless shock waves are a topic of considerable interest in space and laboratory plasma physics due to their ability to efficiently energize and/or accelerate charged particles. Energy dissipation mechanisms in collisionless shocks have been theorized about since the prediction of their existence [*Kellogg*, 1962]. The possible mechanisms include dispersion [*Mellott and Greenstadt*, 1984], anomalous resistivity due to wave-particle interactions [*Kennel et al.*, 1982], and an anomalous viscosity due to ion reflection [*Thomsen et al.*, 1985a]. Ion reflection occurs when a shock has a Mach number that exceeds some theoretical critical Mach number (M_{cr}) above which the shock can no longer dissipate enough energy through resistive or dispersive effects to remain stable [*Edmiston and Kennel*, 1984; *Kennel*, 1987]. We will not focus on dispersive effects in this paper.

The terrestrial bow shock has received a great deal more attention [*Bale et al.*, 1997, 1998a, 2002a] than the usually lower Mach number interplanetary (IP) shocks observed near 1 AU [*Fitzenreiter et al.*, 2003; *Gurnett et al.*, 1979a; *Wilson III et al.*, 2007]. Particle heating was studied by *Thomsen et al.* [1985a] at 10 low Mach ($M_f < 2.5$) bow shock crossings finding strong perpendicular ion heating ($\Delta T_{\perp i} \geq 6$), roughly adiabatic (and semi-isotropic) electron heating ($\Delta T_{\perp,\parallel e} \sim$ 2-5), and relatively little parallel ion heating ($\Delta T_{\parallel i} \leq 2$). $\Delta T_{\perp i}$ was found to greatly exceed the electron heating and adiabatic estimates. They concluded that the observed ion heating was probably due to a modified two-stream instability (MTSI) and possibly field-aligned electron beam driven ion-acoustic waves (IAWs).

Wilson III et al. [2007] studied a set of 67 IP shocks using waveform capture data from the Wind spacecraft. They found that the peak-to-peak amplitude of the largest wave observed in the shock ramp or transition region increased with increasing Mach number and the shock compression ratio. They also found that the probability of observing large amplitude ($\geq$ 5 mV/m peak-to-peak) ion-acoustic waves (IAWs) approached unity in the ramp region when normalized by time.

Gosling et al. [1982]; *Paschmann et al.* [1982]; *Meziane and D'Uston* [1998]; *Thomsen et al.* [1983a, 1985b] studied gyrating and specularly reflected ions upstream of the terrestrial bow shock. *Gosling et al.* [1984] examined suprathermal ions upstream of IP shocks. *Gosling et al.* [1989a] examined suprathermal electrons upstream of the bow shock. They suggest SDA should produce perpendicular anisotropies in the shock layer. They also mention an anti-correlation between diffuse ions and suprathermal electron distributions, but this anti-correlation breaks down further into the magnetosheath near the magnetopause. The suprathermal electrons are observed first (upstream to downstream) in the foot as a FA-beam escaping upstream. Suprathermal electrons can contribute significantly to downstream total electron temperature.

Bipolar electrostatic (ES) electric field signatures with Debye scale-lengths parallel to the background magnetic field have been shown to be associated with electron beams [*Ergun et al.*, 1998a]. *Bale et al.* [2002a] examined solitary waves near the terrestrial bow shock finding the structures to consistent with BGK electron phase space holes. They surmised the free energy source to be the cross-shock potential driven beam mode which would nonlinearly evolve into electron holes. The bipolar electric field structures have been seen at the Earth's geomagnetic tail near the plasma sheet boundary layer [*Cattell et al.*, 2005; *Ergun et al.*, 1998b], the magnetopause [*Cattell et al.*, 2002a, 2003], the terrestrial bow shock [*Bale et al.*, 2002a; *Cattell et al.*, 2003], and at an IP shocks near ~1 AU [*Wilson III et al.*, 2007] and ~8.7 AU [*Williams et al.*, 2005]. All the observations outside the auroral acceleration region have been consistent with electron, not ion, holes. We will refer to these structures as solitary waves.

Abe et al. [1984] *Acuña et al.* [2008] *Akimoto et al.* [1985a] *Akimoto and Winske* [1985] *Akimoto et al.* [1985b] *Akimoto et al.* [1987] *Akimoto and Winske* [1989] *Akimoto et al.* [1991] *Akimoto et al.* [1993] *Albert* [2002] *Albert and Young* [2005] *Albert* [2008] *Albert and Bortnik* [2009] *Amano and Hoshino* [2007] *Amano and Hoshino* [2009a] *Amano and Hoshino* [2009b] *Amano and Hoshino* [2010] *Amato and Arons* [2006] *Anderson et al.* [1982] *Angelopoulos* [2008] *Appert et al.* [1976a] *Appert et al.* [1976b] *Aptekar et al.* [1995] *Anderson* [1983] *André et al.* [2001] *André et al.* [2004] *Archer et al.* [2005] *Archuleta and Deforest* [1971] *Arima et al.* [1980] *Armstrong et al.* [1981] *Arons and Yennie* [1948] *Aschwanden* [2005] *Ashour-Abdalla and Kennel* [1978a] *Ashour-Abdalla and Kennel* [1978b] *Ashour-Abdalla et al.* [1979] *Ashour-Abdalla et al.* [1980] *Ashour-Abdalla and Okuda* [1986] *Ashour-Abdalla et al.* [2006] *Åsnes et al.* [2005a] *Åsnes et al.* [2005b] *Auer et al.* [1962] *Auer et al.* [1971] *Auster et al.* [2008] *Axford et al.* [1998]

Backrud et al. [2005] *Bale et al.* [1996] *Bale et al.* [1997] *Bale et al.* [1998b] *Bale et al.* [1998a] *Bale et al.* [1998c] *Bale et al.* [1999] *Bale et al.* [2000] *Bale et al.* [2002a] *Bale et al.* [2002b] *Bale et al.* [2003] *Bale et al.* [2005a] *Bale et al.* [2005b] *Bale and Mozer* [2007] *Bale et al.* [2008a] *Bale et al.* [2008b] *Bale et al.* [2009] *Balikhin et al.* [1995a] *Balikhin et al.* [1995c] *Balikhin et al.* [1995b] *Balikhin and Wilkinson* [1996] *Balikhin et al.* [1997a] *Balikhin et al.* [1997b] *Balikhin et al.* [1999] *Balikhin et al.* [2001] *Balikhin et al.* [2002] *Balikhin et al.* [2003a] *Balikhin et al.* [2003b] *Balikhin et al.* [2005] *Balogh et al.* [2005] *Bame et al.* [1979] *Bame et al.* [1980] *Barbosa* [1980] *Barbosa* [1982] *Barbosa et al.* [1990] *Barbosa and Kurth* [1980] *Barbosa et al.* [1993] *Barbosa and Kurth* [1993] *Baring and Summerlin* [2009] *Barkhausen* [1919] *Battarbee et al.* [2010] *Baumjohann and Treumann* [1996] *Baumjohann et al.* [1999] *Bavassano-Cattaneo et al.*

[1]Department of Physics and Astronomy, University of Minnesota, Minneapolis, Minnesota, USA.

0094-8276/12/$5.00

[1983] *Bavassano-Cattaneo et al.* [1986] *Bavassano-Cattaneo et al.* [1987] *Begenal et al.* [1987] *Behlke et al.* [2003] *Behlke et al.* [2004] *Beinroth and Neubauer* [1981] *Bekshtein and Sagdeev* [1970] *Bell and Buneman* [1964] *Bell* [1965] *Bell et al.* [1981] *Bell et al.* [1983] *Bell* [1984] *Bell* [1986] *Bell and Ngo* [1988] *Bell and Ngo* [1990] *Bell et al.* [2009] *Benford* [1983] *Berezin and Sagdeev* [1966] *Berezin et al.* [1969] *Bernstein et al.* [1957] *Bernstein* [1958] *Berthomier et al.* [2002] *Berthomier et al.* [2003] *Berthomier et al.* [2008] *Bertucci et al.* [2005] *Bertucci et al.* [2007] *Bingham et al.* [2002] *Bingham et al.* [2005] *Biskamp and Welter* [1972a] *Biskamp et al.* [1972] *Biskamp and Welter* [1972b] *Biskamp* [1972] *Biskamp and Welter* [1972c] *Biskamp and Chodura* [1972] *Biskamp and Welter* [1972d] *Biskamp and Chodura* [1973] *Biskamp* [1973] *Biskamp et al.* [1975] *Biskamp* [1984] *Biskamp et al.* [2000] *Blackwell and Dewhirst* [1959] *Blake et al.* [1996] *Blanco-Cano et al.* [2006] *Blanco-Cano* [2010] *Blandford and Eichler* [1987] *Bohm and Gross* [1949a] *Bohm and Gross* [1949b] *Bonifazi and Moreno* [1981a] *Bonifazi and Moreno* [1981b] *Bonifazi et al.* [1983] *Bonnell et al.* [2008] *Bordoni* [1971] *Bortnik et al.* [2006] *Bortnik et al.* [2007a] *Bortnik et al.* [2007b] *Bortnik and Thorne* [2007] *Bortnik et al.* [2008] *Bortnik et al.* [2009] *Boteler et al.* [1998] *Bougeret* [1985] *Bougeret et al.* [1995] *Bougeret et al.* [2008] *Brain et al.* [2002] *Breech et al.* [2009] *Breech et al.* [2010] *Brehm et al.* [1995] *Breneman et al.* [2009a] *Breneman et al.* [2009b] *Breneman et al.* [2010a] *Breneman et al.* [2010b] *Breneman et al.* [2010c] *Breneman et al.* [2011a] *Breneman et al.* [2011b] *Breneman et al.* [2011c] *Breneman et al.* [2012a] *Breneman et al.* [2012b] *Briand* [2009] *Brice* [1960] *Brice* [1963] *Brice* [1964a] *Brice* [1964b] *Brice and Smith* [1965] *Brice* [1971] *Brinca and Tsurutani* [1989] *Brinca et al.* [1998] *Brinca et al.* [2003a] *Brinca et al.* [2003b] *Brinca et al.* [2004] *Brinkley and Kirkwood* [1947a] *Brinkley and Kirkwood* [1947b] *Büchner and Elkina* [2006] *Buneman* [1959] *Burgess and Schwartz* [1984] *Burgess* [1989a] *Burgess* [1989b] *Burgess et al.* [1989] *Burgess and Scholer* [2007] *Burgess* [2007] *Burtis and Helliwell* [1969] *Burton and Holzer* [1974] *Burton et al.* [2002]

Cairns [1987a] *Cairns* [1987b] *Cairns and Nishikawa* [1989] *Cairns* [1989] *Cairns and Robinson* [1992] *Cairns* [1994] *Cairns and McMillan* [2005] *Califano and Mangeney* [2008] *Camporeale and Burgess* [2008] *Canu et al.* [2001] *Caponi and Krall* [1975] *Cao et al.* [2009] *Cargill and Papadopoulos* [1988] *Carlson et al.* [1998] *Carpenter* [1968] *Castaldo et al.* [1997] *Carlson et al.* [1982] *Carter et al.* [2002a] *Carter et al.* [2002b] *Cattell et al.* [1982] *Cattell and Mozer* [1982] *Cattell and Hudson* [1982] *Cattell and Mozer* [1986] *Cattell et al.* [1986a] *Cattell et al.* [1986b] *Cattell et al.* [1994] *Cattell et al.* [1995] *Cattell et al.* [1996] *Cattell et al.* [1998a] *Cattell et al.* [1998b] *Cattell et al.* [2002a] *Cattell et al.* [2002b] *Cattell et al.* [2003] *Cattell et al.* [2004] *Cattell et al.* [2005] *Cattell et al.* [2008] *Cattell et al.* [2009] *Cattell et al.* [2011a] *Cattell et al.* [2011b] *Cattell et al.* [2012] *Chang et al.* [1990] *Chang* [1993] *Chapman et al.* [2005] *Che et al.* [2009] *Chisham et al.* [1996] *Chodura et al.* [1971] *Chollet and Giacalone* [2008] *Chotoo et al.* [2000] *Chum and Santolík* [2005] *Chum et al.* [2007] *Cohen et al.* [1950] *Colgate* [1959] *Collinson et al.* [2012a] *Collinson et al.* [2012b] *Comisar* [1962] *Comişel et al.* [2011] *Coppi et al.* [1967] *Coppi et al.* [1976] *Coroniti* [1970a] *Coroniti* [1970b] *Coroniti and Eviatar* [1977] *Coroniti et al.* [1982] *Coroniti* [1985] *Cranmer et al.* [1999a] *Cranmer et al.* [1999b] *Cranmer et al.* [1999c] *Cranmer et al.* [1999d] *Cranmer* [2001] *Cranmer et al.* [2009] *Crawford and Tataronis* [1965] *Crooker et al.* [2003] *Crooker and Pagel* [2008] *Crumley et al.* [2001] *Cully et al.* [2008] *Cully et al.* [2011] *Curtis et al.* [1989]

Daughton and Gary [1998] *Daughton* [2003] *Davidson and Gladd* [1975] *Davidson et al.* [1976] *Davidson et al.* [1977] *Davidson* [1978] *Davis* [1977] *Davis et al.* [2008] *Decker and Ram* [2006] *Decker* [1983] *Decker* [1988a] *Decker* [1988b] *Décréau et al.* [1978] *de Koning et al.* [2006] *de Koning et al.* [2007] *Delva et al.* [2008] *Denton et al.* [1998] *Desai and Burgess* [2008] *Deserio* [1989] *Devine et al.* [1995] *de Wit et al.* [1999] *Dieckmann and Shukla* [2006] *Dieckmann et al.* [2006] *Dieckmann et al.* [2008] *Dieckmann et al.* [2010] *Dimmock et al.* [2011] *Dixon and Woods* [1976] *Donnelle and Rust* [2005] *Donnelly and Rust* [2005] *Donnelly* [2006] *Dosch and Shalchi* [2010] *Dowden* [1971] *Draganov et al.* [1993] *Drake et al.* [2003] *Drake et al.* [2009a] *Drake et al.* [2009b] *Dreicer* [1959] *O'C. Drury et al.* [2009] *Dubouloz and Scholer* [1993] *Dubouloz and Scholer* [1995a] *Dubouloz and Scholer* [1995b] *Dum and Dupree* [1970] *Dum and Sudan* [1971] *Dum* [1971] *Dum et al.* [1974] *Dum* [1975] *Dum* [1978a] *Dum* [1978b] *Dum et al.* [1980] *Dum* [1985] *Dum* [1989] *Dum* [1990a] *Dum* [1990b] *Dum* [1990c] *Dum and Nishikawa* [1994] *Dupree* [1966] *Dusenbery and Hollweg* [1981] *Dyrud and Oppenheim* [2006]

Eastwood et al. [2002] *Eastwood et al.* [2004] *Eastwood et al.* [2005a] *Eastwood et al.* [2005b] *Eastwood et al.* [2005c] *Edmiston et al.* [1982] *Edmiston and Kennel* [1984] *Edmiston and Kennel* [1986] *Elaoufir et al.* [1990] *Ellis and Porkolab* [1968] *Ellison and Reynolds* [1991] *Ellison et al.* [1996] *Ellison and Double* [2004] *Ellison et al.* [2005] *Erdos and Balogh* [1990] *Ergun et al.* [1991] *Ergun et al.* [1993] *Ergun et al.* [1998b] *Ergun et al.* [1998a] *Ergun et al.* [1998c] *Ergun et al.* [1998d] *Ergun et al.* [1998e] *Ergun* [1999] *Ergun et al.* [2000] *Ergun et al.* [2008] *Ergun et al.* [2010] *Eselevich* [2010] *Eselevich and Eselevich* [2010] *Eselevich et al.* [1967] *Eselevich et al.* [1971] *Eselevich* [1982] *Eselevich* [1984] *Eselevich and Filippov* [1986] *Eselevich* [1994] *Evans* [1989] *Evans and Morriss* [1990] *Evans et al.* [1990] *Evans and Searles* [1994] *Evans and Morriss* [2008] *Eyni and Kaufman* [1977]

Fairfield [1969] *Fairfield* [1974] *Fairfield and Feldman* [1975] *Farge* [1992] *Farrell et al.* [1990] *Farrell et al.* [2002] *Farrell et al.* [2003] *Farris et al.* [1992] *Farris et al.* [1993] *Feldman et al.* [1973a] *Feldman et al.* [1973b] *Feldman et al.* [1973c] *Feldman et al.* [1975] *Feldman et al.* [1978] *Feldman et al.* [1982] *Feldman et al.* [1983a] *Feldman et al.* [1983b] *Feng et al.* [1992] *Field* [1956] *Filbert and Kellogg* [1979] *Fiser et al.* [2010] *Fishman et al.* [1960] *Fisk and Gloeckler* [2006] *Fitzenreiter et al.* [1984] *Fitzenreiter et al.* [1990] *Fitzenreiter et al.* [1996] *Fitzenreiter et al.* [1998] *Fitzenreiter et al.* [2003] *Fletcher and Hudson* [2008] *Formisano et al.* [1980] *Formisano and Torbert* [1982] *Formisano et al.* [1982] *Formisano* [1982] *Forslund* [1970] *Forslund et al.* [1970] *Forslund and Shonk* [1970] *Forslund et al.* [1971] *Forslund and Freidberg* [1971] *Forslund et al.* [1972] *Forslund et al.* [1984] *Fowler et al.* [1967] *Franz et al.* [1998] *Franz et al.* [2000] *Fränz and Harper* [2002] *Franz et al.* [2005] *Fraser* [2002] *Fredricks et al.* [1965] *Fredricks and Scarf* [1965] *Fredricks* [1968] *Fredricks et al.* [1970a] *Fredricks et al.* [1970b] *French* [1971] *French* [1972] *Freund et al.* [1982] *Friedel et al.* [2002] *Fujimoto and Machida* [2003] *Funsten et al.* [1996] *Furuya et al.* [2008] *Fuselier and Gurnett* [1984] *Fuselier et al.* [1986a] *Fuselier et al.* [1986b] *Fuselier et al.* [1986c] *Fuselier* [1995]

Galeev et al. [1964] *Galeev et al.* [1976] *Galeev* [1984] *Galeev* [1986] *Galeev et al.* [1989] *Galeev et al.* [1995] *Gallagher et al.* [1988] *Galtier* [2009] *Ganguli et al.* [2010] *Gao et al.* [1984] *Garanin et al.* [2000] *Gargaté and Spitkovsky* [2012] *Gary* [1970a] *Gary* [1970b] *Gary and Sanderson* [1970] *Gary* [1970c] *Gary et al.* [1975] *Gary et al.* [1976a] *Gary et al.* [1976b] *Gary* [1978] *Gary and Eastman* [1979] *Gary and Sanderson* [1979] *Gary and Gerwin* [1979] *Gary* [1980] *Gary and Ashour-Abdalla* [1981] *Gary and Sanderson* [1981] *Gary* [1981] *Gary et al.* [1981] *Gary and Schwartz* [1981] *Gary and Thomsen* [1982] *Gary and Tokar* [1985]

Gary and Mellott [1985] *Gary* [1985a] *Gary and Madland* [1985] *Gary* [1985b] *Gary et al.* [1985] *Gary et al.* [1986a] *Gary et al.* [1986b] *Gary and Omidi* [1987] *Gary* [1987] *Gary et al.* [1987] *Gary* [1991] *Gary et al.* [1993a] *Gary et al.* [1993b] *Gary* [1993] *Gary et al.* [1993c] *Gary et al.* [1994] *Gary and Wang* [1996] *Gary et al.* [1998a] *Gary et al.* [1998b] *Gary et al.* [1999] *Gary and Li* [2000] *Gary et al.* [2000a] *Gary et al.* [2000b] *Gary et al.* [2001a] *Gary et al.* [2001b] *Gary et al.* [2001c] *Gary and Nishimura* [2003] *Gary and Karimabadi* [2006] *Gary et al.* [2008] *Geach et al.* [2005] *Gedalin et al.* [1995a] *Gedalin et al.* [1995b] *Gedalin et al.* [1995c] *Gedalin and Zilbersher* [1995] *Gedalin* [1996a] *Gedalin* [1996b] *Gedalin et al.* [1996] *Gedalin* [1997a] *Gedalin* [1997b] *Gedalin* [1999] *Gedalin and Griv* [1999a] *Gedalin and Griv* [1999b] *Gedalin and Balikhin* [2004] *Gedalin et al.* [2008] *Gendrin* [1974] *Génot and Schwartz* [2004] *Ghavamian et al.* [2007] *Giacalone et al.* [1991] *Giacalone et al.* [1993] *Giacalone and Ellison* [2000] *Giacalone* [2003] *Giacalone* [2005] *Giacalone and Jokipii* [2006] *Giacalone and Jokipii* [2007] *Giacalone and Neugebauer* [2008] *Gibbs* [1879] *Gibbs* [1883] *Gibbs* [1891] *Gibbs* [1896] *Ginzburg and Zheleznıakov* [1958] *Gladd* [1976] *Gloeckler et al.* [1994] *Gloeckler et al.* [1995] *Gloeckler* [2003] *Goerke et al.* [1990] *Goldman* [1984] *Goldman et al.* [1999] *Goldstein and Tsurutani* [1984] *Goldstein et al.* [2005] *Goodrich and Scudder* [1984] *Gopalswamy et al.* [2002] *Gopalswamy et al.* [2010] *Goruganthu and Wilson* [1984] *Gosling et al.* [1968] *Gosling et al.* [1975] *Gosling et al.* [1978a] *Gosling et al.* [1978b] *Gosling et al.* [1980] *Gosling et al.* [1982] *Gosling et al.* [1984] *Gosling et al.* [1987] *Gosling et al.* [1989b] *Gosling et al.* [1989a] *Gosling et al.* [1989c] *Gosling* [1993] *Guo and Giacalone* [2010] *Gough et al.* [1979] *Gould* [1995] *Greenstadt et al.* [1975] *Greenstadt* [1976] *Greenstadt et al.* [1977] *Greenstadt et al.* [1978] *Greenstadt et al.* [1980a] *Greenstadt et al.* [1980b] *Greenstadt et al.* [1981] *Greenstadt et al.* [1982a] *Greenstadt et al.* [1982b] *Greenstadt and Mellott* [1985] *Greenstadt and Baum* [1986] *Greenstadt and Mellott* [1987] *Greenstadt et al.* [1990] *Greenstadt* [1991] *Greenstadt et al.* [1991] *Greenstadt et al.* [1992] *Greenstadt et al.* [1993] *Greenstadt et al.* [1995a] *Greenstadt et al.* [1995b] *Grek and Porkolab* [1973] *Gressman and Strain* [2010] *Gribov et al.* [1986] *Griffiths* [1999] *Grimald and Santolík* [2010] *Gringauz et al.* [1960] *Gringauz et al.* [1986] *Grossmann and Morlet* [1984] *Grossmann et al.* [1985] *Gruber and Bekefi* [1968] *Guéret et al.* [1998] *Guha and Sarkar* [1991] *Gurgiolo et al.* [1981] *Gurgiolo et al.* [2010] *Gurnett et al.* [1976] *Gurnett and Anderson* [1977] *Gurnett et al.* [1979a] *Gurnett et al.* [1979b] *Gurnett et al.* [1979c] *Gurnett et al.* [1979d] *Gurnett et al.* [1981a] *Gurnett et al.* [1981b] *Gurnett et al.* [1983a] *Gurnett et al.* [1983b] *Gurnett* [1985] *Gurnett et al.* [1993] *Gurnett et al.* [1995] *Gurnett et al.* [1997] *Gurnett and Bhattacharjee* [2005]

Hada et al. [1987] *Hada et al.* [2003] *Hamasaki et al.* [1971] *Hamelin and Beghin* [1976] *Hamza et al.* [2006] *Hapgood* [1992] *Haque et al.* [2010] *Harker and Crawford* [1968] *Hartle and Sturrock* [1968] *Haruki et al.* [2006] *Harvey et al.* [1995] *Hashimoto and Kimura* [1981] *Hawking* [1974] *Hayakawa et al.* [1984] *Hayashi et al.* [1994] *Hayosh et al.* [2010] *Hellinger et al.* [1996] *Hellinger and Mangeney* [1997a] *Hellinger and Mangeney* [1997b] *Hellinger and Mangeney* [1999] *Hellinger and Matsumoto* [2000] *Hellinger and Matsumoto* [2001] *Hellinger et al.* [2002] *Hellinger* [2003] *Hellinger et al.* [2004] *Hellinger et al.* [2006] *Hellinger and Trávn ́ıček* [2006] *Hellinger et al.* [2007] *Hellinger and Trávníček* [2008] *Hellinger and Trávníček* [2009] *Hellinger et al.* [2011] *Helliwell and Bell* [1960] *Helliwell and Brice* [1964] *Helliwell and Crystal* [1973] *Henri et al.* [2009] *Hess et al.* [1998] *Hess et al.* [2006] *Heyvaerts et al.* [1977] *Hikishima et al.* [2009a] *Hikishima et al.* [2009b] *Hinkel-Lipsker et al.* [1992] *Hiroe et al.* [1968] *Hiroe and Ikegami* [1973] *Ho et al.* [2009] *Hobara et al.* [1998] *Hobara et al.* [2000] *Hobara et al.* [2007a] *Hobara et al.* [2007b] *Hobara et al.* [2008] *Hobara et al.* [2010] *de Hoffmann and Teller* [1950] *Hollweg and Völk* [1970] *Hollweg and Turner* [1978] *Hollweg* [1978] *Hollweg* [1981] *Hollweg et al.* [1982a] *Hollweg et al.* [1982b] *Hollweg* [1982] *Hollweg* [1986] *Hollweg and Johnson* [1988] *Hollweg and Markovskii* [2002] *Hollweg and Isenberg* [2002] *Hollweg* [2006a] *Hollweg* [2006b] *Honzawa* [1973] *Hoover* [1986] *Hoover* [1992] *Hoppe and Russell* [1980] *Hoppe et al.* [1981] *Hoppe and Russell* [1981] *Hoppe and Russell* [1982] *Hoppe et al.* [1982] *Hoppe and Russell* [1983] *Horbury and Balogh* [2001] *Horbury et al.* [2001] *Horita* [1972] *Horiuchi and Sato* [1999] *Horne et al.* [1981a] *Horne et al.* [1981b] *Horne and Thorne* [1998] *Horne and Thorne* [2000] *Horne et al.* [2003a] *Horne et al.* [2003b] *Horne et al.* [2005] *Horton et al.* [1976] *Horton and Choi* [1979] *Hoshino et al.* [2001] *Hoshino and Shimada* [2002] *Hoshino* [2005] *Hu et al.* [1999] *Huang et al.* [2004] *Huang et al.* [2009] *Huba and Wu* [1976] *Huba et al.* [1977] *Huba and Papadopoulos* [1978] *Huba et al.* [1978] *Hubbard and Birmingham* [1978] *Hudgins et al.* [1993] *Hull et al.* [1998] *Hull et al.* [2000] *Hull and Scudder* [2000] *Hull et al.* [2001] *Hull et al.* [2003] *Hull et al.* [2006] *Hundhausen et al.* [1967] *Hupach et al.* [2012] *Huttunen et al.* [2007] *Huttunen et al.* [2008] *Huttunen-Heikinmaa and Valtonen* [2009] *Hwang et al.* [2007]

Inan et al. [2004] *Ishihara and Hirose* [1981] *Ishihara and Hirose* [1983a] *Ishihara and Hirose* [1983b] *Istomin and Leyser* [1995]

Jackson [1960] *Jackson* [1998] *Jacques* [1977] *Jain and Sharma* [1979] *Ji et al.* [2004] *Ji et al.* [2005a] *Ji et al.* [2005b] *Jian et al.* [2012] *Jones* [1980] *Jones* [1982] *Jones et al.* [1987] *Jones and Ellison* [1991] *Jory and Trivelpiece* [1968]

Kahler et al. [1984] *Kahler* [1987] *Kahler et al.* [1989] *Kahler* [1992] *Kang and Jones* [1995] *Kappernman and Albertson* [1990] *Karimabadi et al.* [1987] *Karney and Bers* [1977] *Kasaba et al.* [2000] *Kasahara et al.* [2009] *Kasper et al.* [2002] *Kasper et al.* [2003] *Kasper et al.* [2006] *Kasper et al.* [2007] *Kasper et al.* [2008] *Kasper et al.* [2009] *Kasper* [2007] *Kataoka et al.* [2005] *Kato and Takabe* [2010] *Katoh et al.* [2008] *Kaur et al.* [2009] *Kawano and Higuchi* [1995] *Kawano et al.* [1999] *Kellogg et al.* [1959] *Kellogg* [1959] *Kellogg and Ney* [1959] *Kellogg and Liemohn* [1960] *Kellogg* [1960a] *Kellogg* [1960b] *Kellogg and Winckler* [1961] *Kellogg* [1962] *Kellogg and Winckler* [1962] *Kellogg* [1963a] *Kellogg* [1963b] *Kellogg* [1963c] *Kellogg* [1964a] *Kellogg* [1964b] *Kellogg* [1965] *Kellogg et al.* [1986] *Kellogg* [1986] *Kellogg et al.* [1990] *Kellogg et al.* [1992a] *Kellogg et al.* [1992b] *Kellogg et al.* [1996a] *Kellogg et al.* [1996b] *Kellogg et al.* [1996c] *Kellogg et al.* [1999a] *Kellogg et al.* [1999b] *Kellogg et al.* [1999c] *Kellogg* [2000] *Kellogg et al.* [2001] *Kellogg and Bale* [2001] *Kellogg et al.* [2003] *Kellogg* [2003] *Kellogg and Bale* [2004] *Kellogg et al.* [2006] *Kellogg* [2008] *Kellogg et al.* [2009a] *Kellogg et al.* [2009b] *Kellogg et al.* [2010a] *Kellogg et al.* [2010b] *Kellogg et al.* [2011] *Kennel and Petscheck* [1966] *Kennel and Engelmann* [1966] *Kennel and Sagdeev* [1967a] *Kennel and Sagdeev* [1967b] *Kennel and Thorne* [1967] *Kennel and Scarf* [1968] *Kennel and Petschek* [1968] *Kennel et al.* [1970] *Kennel et al.* [1980] *Kennel* [1981] *Kennel et al.* [1982] *Kennel et al.* [1984a] *Kennel et al.* [1984b] *Kennel et al.* [1985] *Kennel et al.* [1986a] *Kennel et al.* [1986b] *Kennel* [1987] *Kennel* [1988] *Kersten et al.* [2008] *Kersten et al.* [2010] *Kersten et al.* [2011a] *Kersten et al.* [2011b] *Khabibrakhmanov et al.* [1993] *Khotyaintsev et al.* [2010] *Khrabrov and Sonnerup* [1998] *Kim et al.* [2008] *Kirov et al.* [2009] *Kis et al.* [2004] *Kis et al.* [2007] *Klimov et al.* [1986] *Kogan* [1961] *Kojima et al.* [1997] *Koons and Fennell* [1984] *Koons and Roeder* [1990] *Korreck et al.* [2007] *Kosten* [1943] *Koval and Szabo* [2008] *Koval and Szabo* [2010] *Kovitz* *and Mintzer* [1966] *Krall and Liewer* [1971] *Kruchina et al.* [1980] *Krämer et al.* [1988] *Krasnoselskikh et al.* [1985] *Krasnosel'Skikh et al.* [1991] *Krasnosselskikh et al.* [1995] *Krasnoselskikh et al.* [2002] *Krasnoselskikh et al.* [2007] *Krauss-Varban and Omidi* [1991] *Krauss-Varban et al.* [1995] *Krems et al.* [2005] *Kucharek et al.* [2004] *Kucharek and Möbius* [2005] *Kucharek* [2008] *Kuley and Tripathi* [2009] *Kulsrud et al.* [2005] *Kumagai et al.* [1980] *Kumar and Tripathi* [2006] *Kumar and Tripathi* [2008] *Kuncic et al.* [2002] *Kurth et al.* [1979] *Kurth et al.* [1980a] *Kurth et al.* [1980b] *Kurth et al.* [1983] *Kurth* [1992] *Kurth et al.* [2001]

Labelle and Treumann [1988a] *Labelle and Treumann* [1988b] *Labelle et al.* [1988] *LaBelle and Treumann* [2002] *Lacombe et al.* [2006] *Ladislas Wiza* [1979] *Lakhina* [1985] *Lakhina and Buti* [1996] *Laming* [2001a] *Laming* [2001b] *Lampe et al.* [1971a] *Lampe et al.* [1971b] *Lampe et al.* [1972a] *Lampe et al.* [1972b] *Lampton et al.* [1987] *Landau* [1946] *Lang* [2000a] *Lang* [2000b] *Lapenta et al.* [2003] *Larson et al.* [1996] *Larson et al.* [1997] *Lashmore-Davies and Martin* [1973] *Lau and Weng* [1995] *Lauben et al.* [2002] *Lavergnat et al.* [1982] *Lavraud et al.* [2010] *Lazar et al.* [2009] *Lazar and Poedts* [2009] *Lazar et al.* [2010] *Lazar et al.* [2011] *Lazaré and Poedtsé* [2009] *Le et al.* [1989] *Le Contel et al.* [2008] *Le Contel et al.* [2009] *LeDocq et al.* [1998] *Le Queau and Roux* [1987a] *Le Queau and Roux* [1987b] *Lee et al.* [2009] *Lee* [1971] *Lee* [1972] *Lee* [1980] *Lee* [1982] *Lee and Gary* [1991] *Lee et al.* [1996] *Lee et al.* [2004] *Lee et al.* [2005a] *Lee et al.* [2005b] *Lefebvre et al.* [2007] *Lefebvre et al.* [2009] *Lefeuvre and Helliwell* [1985] *Lehtinen et al.* [1997] *Lembège* [1980a] *Lembège* [1980b] *Lembège* [1983] *Lembège* [1984] *Lembège and Dawson* [1984] *Lembège and Dawson* [1987] *Lembège and Dawson* [1989a] *Lembège and Dawson* [1989b] *Lembège and Savoini* [1992] *Lembège and Savoini* [2002] *Lembège et al.* [2003] *Lembège et al.* [2004] *Lembège et al.* [2008] *Lembège et al.* [2009] *Lemons and Gary* [1977] *Lemons and Gary* [1978] *Lemons et al.* [1979] *Lengyel-Frey et al.* [1994] *Lengyel-Frey et al.* [1996] *Lepping and Behannon* [1980] *Lepping et al.* [1995] *Leroy et al.* [1982] *Leroy* [1983] *Leubner* [2000] *Leubner* [2004] *Lever et al.* [2001] *Leyser et al.* [1993] *Li and Habbal* [1999] *Li and Habbal* [2000] *Li et al.* [2008] *Li et al.* [2009] *Li et al.* [2010] *Lin et al.* [1995a] *Lin et al.* [1996a] *Lin et al.* [1998] *Lin et al.* [1999] *Lin et al.* [2001a] *Lin et al.* [1995b] *Lin et al.* [1996b] *Lin* [1998] *Lin et al.* [2001b] *Lipatov and Zank* [1999] *Lipatov et al.* [2012] *Liu et al.* [2005] *Livesey et al.* [1982] *Livesey et al.* [1984] *Lobzin et al.* [2007] *Lobzin et al.* [2008] *Lorentzen et al.* [2001] *Lu et al.* [2008] *Lu et al.* [2009] *Lucas and Brice* [1973] *Lucek and Balogh* [1997] *Lucek and Balogh* [1998] *Lucek et al.* [2002] *Lucek et al.* [2004] *Lucek et al.* [2008] *Lucke* [1976] *Luhmann et al.* [1998] *Luhmann et al.* [2008] *Luo et al.* [2003] *Lutsenko and Kudela* [1999] *Lye and Dekker* [1957] *Lynch et al.* [2008] *Lyons et al.* [1972] *Lyons and Thorne* [1972] *Lyons* [1974] *Lyons et al.* [2005] *Lysak and Song* [2003]

Ma and Hirose [2009] *MacDowall et al.* [1996] *Mace and Hellberg* [1993] *Mace* [1998] *Mace* [2004] *Mace and Sydora* [2010] *MacQueen et al.* [1980] *Maksimovic et al.* [1997] *Maksimovic et al.* [2000] *Maksimovic et al.* [2003] *Malaspina and Ergun* [2008] *Malaspina et al.* [2009] *Malaspina et al.* [2011] *Malaspina et al.* [2012a] *Malaspina et al.* [2012b] *Malkov and Diamond* [2009a] *Malkov and Diamond* [2009b] *Malmberg and Wharton* [1964] *Malmberg and Wharton* [1966] *Malmberg and Wharton* [1967] *Mangeney et al.* [1999] *Manheimer and Flynn* [1974] *Mann et al.* [1994] *Markovskii and Hollweg* [2002] *Marsch and Chang* [1982] *Marsch et al.* [1982a] *Marsch et al.* [1982b] *Marsch et al.* [1982c] *Marsch and Chang* [1983] *Marsch and Richter* [1984] *Marsch et al.* [1989] *Marsch and Tu* [1996] *Marsch and Roux* [1996] *Marsch* [2006] *Martins et al.* [2009] *Masood et al.* [2006] *Masood and Schwartz* [2008] *Masters et al.* [2009] *Matsui et al.* [1997] *Matsukiyo and Scholer* [2003] *Matsukiyo and Scholer* [2006a] *Matsukiyo and Scholer* [2006b] *Matsukiyo et al.* [2007] *Matsukiyo and Hada* [2009] *Matsukiyo and Scholer* [2011] *Matsumoto and Yasuda* [1976] *Matsumoto and Omura* [1981] *Matsumoto* [1985] *Matsumoto et al.* [1994] *Matsumoto and Usui* [1997] *Matteini et al.* [2006] *Matteini et al.* [2007] *Matteini et al.* [2010a] *Matteini et al.* [2010b] *Mazelle and Neubauer* [1993] *Mazelle et al.* [2000] *Mazelle et al.* [2003] *Mazelle et al.* [2005] *Mazelle et al.* [2010] *McBride et al.* [1972] *McClements et al.* [1990] *McClements et al.* [1993] *McClements et al.* [1997] *McComas et al.* [1998] *McComas et al.* [2000] *McFadden et al.* [1998a] *McFadden et al.* [1998b] *McFadden et al.* [2007] *McFadden et al.* [2008a] *McFadden et al.* [2008b] *McMillan and Cairns* [2006] *Meeks and Siegel* [2008] *Meli* [2010] *Mellott and Greenstadt* [1984] *Mellott* [1984] *Mellott* [1985] *Mellott and Livesey* [1987] *Mellott and Greenstadt* [1988] *Menietti et al.* [2001] *Menietti et al.* [2002] *Menietti et al.* [2008] *Menietti et al.* [2009] *Meredith et al.* [1999] *Meredith et al.* [2000] *Meredith et al.* [2001] *Meredith et al.* [2003a] *Meredith et al.* [2003b] *Meredith et al.* [2003c] *Meredith et al.* [2004] *Meredith et al.* [2006] *Meredith et al.* [2007] *Meredith et al.* [2009a] *Meredith et al.* [2009b] *Messmer* [2002] *Meyer and Leclert* [1974] *Meyer-Vernet and Perche* [1989] *Meziane et al.* [1997] *Meziane and D'Uston* [1998] *Meziane et al.* [1999] *Meziane et al.* [2001] *Meziane et al.* [2002] *Meziane et al.* [2003] *Meziane et al.* [2004a] *Meziane et al.* [2004b] *Meziane et al.* [2007] *Meziane et al.* [2010] *Meziane et al.* [2011a] *Meziane et al.* [2011b] *Miao et al.* [2009] *Mielke and Helliwell* [1992] *Migliuolo* [1985] *Millan and Thorne* [2007] *Barrel Team Millan* [2011] *Miller* [1998] *Miteva et al.* [2007] *Miyake et al.* [1998] *Miyake et al.* [2000] *Moebius et al.* [1987] *Möbius et al.* [2001] *Moiseev and Sagdeev* [1963] *Mosier and Gurnett* [1971] *Montgomery et al.* [1976] *Moore et al.* [1995] *Moreira* [1983] *Morlet et al.* [1982] *Morlet* [1982] *Morse* [1965] *Morse and Nielson* [1971] *Morton* [1964] *Moses et al.* [1985a] *Moses et al.* [1985b] *Moses et al.* [1988a] *Moses et al.* [1988b] *Moses et al.* [1989] *Moullard et al.* [1998] *Moullard et al.* [2001] *Moullard et al.* [2002] *Mozer et al.* [2004] *Mühlbachler et al.* [2009] *Muller et al.* [1986] *Murtaza and Shukla* [1984] *Muschietti et al.* [1982] *Muschietti and Dum* [1990] *Muschietti and Dum* [1991] *Muschietti et al.* [1996] *Muschietti et al.* [1999a] *Muschietti et al.* [1999b] *Muschietti et al.* [2000] *Muschietti and Lembège* [2006] *Muschietti and Roth* [2008]

Nagai et al. [1985] *Nagano et al.* [1994] *Narita and Glassmeier* [2005] *Narita et al.* [2006] *Ne&McAron et al.* [2010] *Neubauer and Musmann* [1977] *Neugebauer and Snyder* [1962] *Neugebauer and Giacalone* [2005] *Neugebauer* [2010] *Newbury et al.* [1998a] *Newbury et al.* [1998b] *Ney and Kellogg* [1959] *Ni et al.* [2008] *Ni et al.* [2011] *Nishikawa et al.* [1994] *Nishikawa et al.* [2009] *Nishimura et al.* [2002] *Nunn* [1974] *Nunn et al.* [1997] *Nunn et al.* [2003] *Nunn et al.* [2009]

Oberheide et al. [1997] *Ofman et al.* [2009] *Ogilvie et al.* [1995] *Ohira and Takahara* [2008] *Ohnuma et al.* [1982] *Ohnuma and Watanabe* [1982] *Øieroset et al.* [2001] *Øieroset et al.* [2002] *Oka et al.* [2006] *Omidi and Winske* [1990] *Omidi et al.* [1990] *Omura and Matsumoto* [1982] *Omura et al.* [1996] *Omura et al.* [2007] *Omura et al.* [2008] *Omura et al.* [2009] *Omura and Nunn* [2011] *Onsager et al.* [1989] *Onsager et al.* [1990a] *Onsager and Holzworth* [1990] *Onsager et al.* [1990b] *Onsager et al.* [1990c] *Onsager et al.* [1991a] *Onsager et al.* [1991b] *Oppenheim et al.* [1999] *Oppenheim et al.* [2001] *Orlowski et al.* [1990] *Orlowski and Russell* [1991] *Orlowski et al.* [1992] *Orlowski et al.* [1994] *Orlowski et al.* [1995] *Orlowski* [2004] *Orta et al.* [2003] *Osmane et al.* [2010] *Ossakow et al.* [1972a] *Ossakow et al.* [1972b] *Ossakow et al.* [1972c] *Ostrovskii* [1976] *Owens et al.* [1995] *Oya* [1972] *Oya et al.* [1994]

Paesold and Benz [2003] *Pagel et al.* [2005a] *Pagel et al.* [2005b] *Pagel et al.* [2007] *Palmadesso and Schmidt* [1971] *Palmadesso and Schmidt* [1972] *Paolini and Theodoridis* [1967] *Papadopoulos* [1971] *Papadopoulos et al.* [1971] *Papadopoulos and Coffey* [1974] *Papadopoulos and Palmadesso* [1976] *Papadopoulos* [1985] *Papadopoulos* [1988] *Parashar et al.* [2009] *Parker* [1963] *Parks et al.* [2006] *Parks et al.* [2007] *Parrot et al.* [2003] *Parrot et al.* [2007] *Paschmann et al.* [1979] *Paschmann et al.* [1980] *Paschmann et al.* [1981] *Paschmann et al.* [1982] *Paschmann et al.* [1985] *Paschmann and Daly* [1998] *Pasmanik et al.* [2002] *Patrick and Pugh* [1969] *Pešić* [1972] *Pesses et al.* [1982] *Pesses* [1982] *Petkaki et al.* [2003] *Petkaki et al.* [2006] *Petkaki and Freeman* [2008] *Petschek* [1958] *Phan et al.* [1996] *Phan et al.* [2000] *Phan et al.* [2001] *Phillips and Robson* [1972] *Phillips et al.* [1989a] *Phillips et al.* [1989b] *Phillips et al.* [1995] *Pickett et al.* [1999] *Pickett et al.* [2001] *Pickett et al.* [2003] *Pickett et al.* [2004b] *Pickett et al.* [2004a] *Pickett et al.* [2005] *Pierrard et al.* [2011] *Pilipp et al.* [1987a] *Pilipp et al.* [1987b] *Pilipp et al.* [1987c] *Pilipp et al.* [1990] *Pirjola* [1983] *Pirjola* [1989] *Pirjola et al.* [2000] *Pokhotelov et al.* [2008] *Porkolab and Sinnis* [1968] *Potter* [1981] *Pudovkin et al.* [1998] *Pulkkinen et al.* [2005] *Pulkkinen et al.* [2006] *Pulkkinen et al.* [2008] *Pulupa and Bale* [2008] *Pulupa et al.* [2008] *Pulupa et al.* [2010] *Purcell* [1938]

Quest et al. [1983] *Quest and Shapiro* [1996]

Raymond et al. [2000] *Rakowski et al.* [2008] *Rayleigh* [1910] *Reames* [2000] *Reames* [2001] *Reinleitner et al.* [1982] *Revathy and Lakhina* [1977] *Revathy* [1977] *Richardson* [2010a] *Richardson* [2010b] *Riquelme and Spitkovsky* [2011] *Roberts and Buchsbaum* [1964] *Robinson* [1992] *Robinson and Cairns* [1993] *Robinson* [1993] *Rodriguez* [1985] *Roeder et al.* [1987] *Roeder and Koons* [1989] *Rogers et al.* [2000] *Romeiras and Brinca* [1999] *Ronnmark et al.* [1978] *Ronnmark* [1983] *von Rosenvinge et al.* [1995a] *Roth and Hudson* [1992] *Roth et al.* [1999] *Roth and Bale* [2006] *Roux et al.* [2008] *Ruan et al.* [2009] *Russell et al.* [1969] *Russell et al.* [1971] *Russell et al.* [1972] *Russell and Hoppe* [1981] *Russell et al.* [1982a] *Russell et al.* [1982b] *Russell and Hoppe* [1983] *Russell et al.* [1983a] *Russell et al.* [1983b] *Russell et al.* [1983c] *Russell and Alexander* [1984] *Russell* [1988] *Russell and Farris* [1995] *Russell et al.* [1995] *Russell* [2007] *Russell et al.* [2009a] *Russell et al.* [2009b] *Russell et al.* [2012] *Rust and Donnelly* [2005a] *Rust and Donnelly* [2005b] *Ryu et al.* [2007]

Sagdeev [1966] *Sagdeev et al.* [1977] *Sagdeev* [1979a] *Sagdeev* [1979b] *Sagdeev et al.* [1987] *Sahraoui et al.* [2003] *Saito et al.* [1995] *Saito and Gary* [2007] *Saito et al.* [2008] *Saito and Umeda* [2011] *Sakurai and Hashizume* [1986] *Salem et al.* [2003] *Samson and Olson* [1980] *Sanderson et al.* [1983] *Sanderson et al.* [1985] *Sanderson et al.* [1996] *Santolík et al.* [2001] *Santolík et al.* [2003] *Santolík et al.* [2004] *Santolík et al.* [2005] *Santolík et al.* [2006] *Santolík* [2008] *Santolík et al.* [2009] *Santolík et al.* [2010a] *Santolík et al.* [2010b] *Sauer et al.* [2002] *Sauer and Sydora* [2010] *Savin et al.* [1987] *Savoini and Lembège* [1995] *Savoini et al.* [2005] *Saxena* [1982] *Saxena et al.* [2005] *Scarf et al.* [1965] *Scarf and Noble* [1965] *Scarf et al.* [1974] *Scarf et al.* [1979] *Schecker et al.* [1992] *Schmitz et al.* [2002a] *Schmitz et al.* [2002b] *Scholer and Belcher* [1971] *Scholer and Burgess* [1992] *Scholer* [1993] *Scholer and Fujimoto* [1993] *Scholer et al.* [1993] *Scholer* [1995] *Scholer et al.* [2000] *Scholer et al.* [2003a] *Scholer et al.* [2003b] *Scholer et al.* [2003c] *Scholer and Matsukiyo* [2004] *Scholer and Matsukiyo* [2005] *Scholer and Burgess* [2007] *Schriver et al.* [2010] *Schwadron et al.* [1996] *Schwartz et al.* [1983] *Schwartz and Marsch* [1983] *Schwartz and Burgess* [1984] *Schwartz et al.* [1988] *Schwartz and Burgess* [1991] *Schwartz* [1991] *Schwartz et al.* [1992] *Schwartz et al.* [1996] *Schwartz et al.* [2006] *Schwartz* [2006] *Schwartz et al.* [2011] *Schwenn* [2006] *Scime et al.* [2001] *Sckopke et al.* [1983] *Sckopke et al.* [1990] *Scudder et al.* [1986a] *Scudder et al.* [1986b] *Scudder et al.* [1986c] *Scudder* [1992a] *Scudder* [1992b] *Scudder* [1995] *Scudder et al.* [1995] *Scudder* [1996] *Seki et al.* [2009] *Sentman et al.* [1979] *Sentman et al.* [1981] *Sentman et al.* [1983] *Seyler* [1994] *Shapiro et al.* [1993] *Shapiro et al.* [1994] *Shapiro and Sagdeev* [1997] *Shapiro et al.* [1999] *Shapiro et al.* [2001] *Shapiro and Üçer* [2003] *Shaw and Gurnett* [1975] *Shelley et al.* [1995] *Sherwell and Cairns* [1978] *Shimada et al.* [1997] *Shimada et al.* [1998] *Shimada et al.* [1999] *Shimada and Hoshino* [2000] *Shimada and Hoshino* [2003] *Shimada and Hoshino* [2004] *Shimada and Hoshino* [2005] *Shin et al.* [2008] *Shinohara et al.* [1998] *Shinohara and Hoshino* [1999] *Shu* [1992] *Sibeck and Angelopoulos* [2008] *Sigsbee et al.* [2010] *Silin et al.* [2005] *Simões et al.* [2010] *Singh* [1972] *Singh et al.* [1985] *Singh et al.* [2010] *Sironi and Spitkovsky* [2011] *Siscoe and Schwenn* [2006] *Siscoe et al.* [2006] *Slavin and Holzer* [1981] *Smirnov and Vaisberg* [1995] *Smith et al.* [1960] *Smith and Helliwell* [1960] *Smith and Tsurutani* [1976] *Smith and Gary* [1987] *Smith* [1989] *Smith et al.* [1989] *Smith et al.* [1991] *Smith and Jenkins* [1998] *Sodha et al.* [1980] *Solomon et al.* [1995] *Sonett et al.* [1964] *Song and Lysak* [2006] *Sonnerup* [1971a] *Sonnerup* [1971b] *Sonnerup et al.* [1981] *Soucek et al.* [2005] *Soucek et al.* [2009] *Spangler* [2009] *Spitzer* [1952] *Spitzer and Härm* [1953] *Spitzer* [1960] *Spitzer* [1963] *Spitzer and Arny* [1978] *Starodubtsev et al.* [1999a] *Starodubtsev and Krafft* [1999a] *Starodubtsev et al.* [1999b] *Starodubtsev and Krafft* [1999b] *Stasiewicz et al.* [2003] *Stasiewicz* [2004] *Stawarz et al.* [2009] *Stenzel and Ripin* [1973] *Stepanov et al.* [2007] *Stix* [1960] *Stix* [1962] *Stix* [1992] *Stone and Auer* [1965] *Stone et al.* [1992] *Storey* [1953] *Storey et al.* [1991] *Straub et al.* [1999] *Streltsov et al.* [2009] *Stringer* [1963] *Sturrock* [1958] *Sturrock* [1961a] *Sturrock* [1961b] *Štverák et al.* [2008] *Štverák et al.* [2009] *Su et al.* [2009] *Su et al.* [2010] *Sudarshan and Sharma* [1996] *Sugawa et al.* [1974] *Sugawa and Sugaya* [1985] *Sugawa* [1987] *Sugawa* [1988] *Summers et al.* [1998] *Summers et al.* [2007] *Sundkvist et al.* [2012] *Sydora et al.* [2007]

Tam and Chang [1999] *Tam and Chang* [2001] *Tanaka et al.* [1983] *Tang et al.* [2012] *Taylor and Coroniti* [1972] *Temerin et al.* [1979] *Teste and Parks* [2009] *Thejappa et al.* [1995] *Thejappa and MacDowall* [1998] *Thejappa et al.* [1999] *Thejappa and MacDowall* [2000] *Theodoridis and Paolini* [1969] *Thomas et al.* [1990] *Thomsen and Gary* [1982] *Thomsen et al.* [1983b] *Thomsen et al.* [1983a] *Thomsen et al.* [1983c] *Thomsen et al.* [1985a] *Thomsen et al.* [1985b] *Thomsen et al.* [1987a] *Thomsen et al.* [1987b] *Thomsen* [1988] *Thomsen et al.* [1990a] *Thomsen et al.* [1990b] *Thomsen* [2004] *Thorne and Kennel* [1971] *Thorne et al.* [1973] *Thorne et al.* [1979] *Thorne and Tsurutani* [1981] *Thorne and Horne* [1994] *Thorne and Horne* [1996] *Thorne et al.* [2005] *Tidman and Stainer* [1965] *Tidman* [1965] *Tidman and Dupree* [1965] *Tidman and Krall* [1971] *Timothy et al.* [1981] *Tobita et al.* [1987] *Toida et al.* [2002] *Toida and Gohira* [2011] *Tokar et al.* [1984] *Tokar and Gurnett* [1985] *Torrence and Compo* [1998a] *Torrence and Compo* [1998b] *Treumann et al.* [1991] *Treumann et al.* [1996] *Treumann and Baumjohann* [1997] *Treumann et al.* [2000] *Treumann* [2009] *Tripathi and Liu* [1982] *Tripathi and Singhal* [2005] *Tripathi and Singhal* [2007] *Tsai et al.* [2007] *Tsubouchi and Lembège* [2004] *Tsurutani and Smith* [1974] *Tsurutani and Smith* [1977] *Tsurutani and Rodriguez* [1981] *Tsurutani et al.* [1983] *Tsurutani et al.* [1987] *Tsurutani et al.* [1989a] *Tsurutani et al.* [1989b] *Tsurutani et al.* [1990a] *Tsurutani et al.* [1990b] *Tsurutani et al.* [2001] *Tsurutani et al.* [2009] *Tsutsui et al.* [1975] *Tu and Marsch* [2001a] *Tu and Marsch* [2001b] *Tucker* [1973]

Ukhorskiy et al. [2011] *Umeda et al.* [2004] *Umeda et al.* [2006] *Umeda et al.* [2007] *Umeda et al.* [2008] *Umeda and Ito* [2008] *Umeda et al.* [2009] *Umeda et al.* [2010] *Umeda et al.* [2011] *Umeda et al.* [2012] *Usui et al.* [1997] *Usui et al.* [1999a] *Usui et al.* [1999b]

Vaisberg et al. [1982] *Vaivads et al.* [2004a] *Vaivads et al.* [2004b] *Vaivads et al.* [2007] *Vedenov* [1963] *Vekshtein et al.* [1970] *Veltri et al.* [1990] *Verdon et al.* [2009a] *Verdon et al.* [2009b] *Verkhoglyadova and Tsurutani* [2009] *Vetoulis and Oppenheim* [2001] *Viljanen and Pirjola* [1994] *Villani* [2002] *Villani* [2006] *Vinas and Scudder* [1986] *Viñas and Gurgiolo* [2009] *Viñas et al.* [2010] *Vink and Laming* [2003] *Vladimirov et al.* [2008] *Vocks and Marsch* [2002] *Vocks and Mann* [2003] *Vocks et al.* [2005] *Vocks and Mann* [2006] *Vocks et al.* [2008] *Vocks and Mann* [2009] *Volokitin et al.* [1997] *Volokitin and Krafft* [2001a] *Volokitin and Krafft* [2001b] *von Rosenvinge et al.* [1995b] *Vranjes and Poedts* [2009a] *Vranjes and Poedts* [2009b]

Walker et al. [1999] *Walker et al.* [2004a] *Walker et al.* [2004b] *Walker et al.* [2008] *Wang et al.* [2010] *Warmuth et al.* [2009] *Watt et al.* [2002] *Weibel* [1959] *Wilkinson et al.* [1993] *Willes and Cairns* [2001] *Willes et al.* [2002] *Willett and Mehdian* [1982] *Williams et al.* [2005] *Wilson III et al.* [2006] *Wilson III et al.* [2007] *Wilson III et al.* [2008] *Wilson III et al.* [2009a] *Wilson III et al.* [2009b] *Wilson III et al.* [2010a] *Wilson III et al.* [2010b] *Wilson III et al.* [2010c] *Wilson III et al.* [2010d] *Wilson III et al.* [2010e] *Wilson III* [2010] *Wilson III et al.* [2011a] *Wilson III et al.* [2011b] *Wilson III et al.* [2011c] *Wilson III et al.* [2011d] *Wilson III et al.* [2011e] *Wilson III et al.* [2011f] *Wilson III et al.* [2011g] *Wilson III et al.* [2012a] *Wilson III et al.* [2012b] *Wilson III et al.* [2012c] *Wilson III et al.* [2012d] *Wilson III et al.* [2012e] *Wilson III et al.* [2012f] *Wilson III et al.* [2012g] *Wilson III et al.* [2012h] *Wilson III et al.* [2012i] *Wilson III et al.* [2012j] *Wilson III et al.* [2012k] *Wilson III et al.* [2012l] *Wilson III et al.* [2012m] *Wilson III et al.* [2012n] *Desch* [2005] *Winglee and Kellogg* [1990] *Winglee et al.* [1992] *Winske and Liewer* [1978] *Winske and Leroy* [1984] *Winske et al.* [1985] *Winske et al.* [1987] *Winske and Quest* [1988] *Winske et al.* [1990] *Winterhalter and Kivelson* [1988] *Wong* [1970] *Wong and Goldstein* [1987] *Wong and Goldstein* [1990] *Wong and Smith* [1994] *Woods* [1963] *Woods* [1964] *Woods* [1969a] *Woods* [1969b] *Woods* [1969c] *Woods* [1971a] *Woods* [1971b] *Wu* [1982] *Wu et al.* [1983] *Wu et al.* [1984] *Wu* [1984] *Wu et al.* [2009] *Wu et al.* [2010a] *Wu et al.* [2010b] *Wuest et al.* [2007] *Wüest, M., Evans, D. S., & von Steiger, R.* [2007] *Wygant et al.* [1987] *Wygant et al.* [2000] *Wygant et al.* [2002] *Wygant et al.* [2005]

Xiang and Cary [2008]

Yadav et al. [2009] *Yamagiwa et al.* [1976] *Yamagiwa* [1977] *Yan et al.* [2008] *Yang et al.* [2009] *Yang et al.* [2011] *Yin and Ashour-Abdalla* [1999] *Yuan et al.* [2007] *Yuan et al.* [2008a] *Yuan et al.* [2008b] *Yuan et al.* [2009] *Yoon et al.* [1992] *Yoon and Lui* [2006] *Yoon and Lui* [2007] *Yoon* [2011] *Young et al.* [1973] *Yu et al.* [1978] *Yue et al.* [2010]

Zaitsev et al. [1978] *Zhang et al.* [1993] *Zhang and Matsumoto* [1998] *Zhang et al.* [1998a] *Zhang et al.* [1998b] *Zhang et al.* [1999a] *Zhang et al.* [1999b] *Zhelezniakov and Zlotnik* [1975] *Zhou et al.* [1983] *Zhou et al.* [1984] *Zhou et al.* [2009a] *Zhou et al.* [2009b] *Zhou et al.* [2009c] *Zong et al.* [2009]

Shimada and Hoshino [2000] examined electron acceleration at high Mach number shock waves using a PIC simulation with $M_i/m_e = 20$. They found that the interaction between incident electrons and reflected ions, the BI, resulted electron holes and roughly 25-35% of the incident bulk flow energy is converted into electron thermal energy. They found the energy exchange between electrons and ions enhanced the local bipolar field of the electron holes leading to stronger electron thermalization as the Mach number increased.

Drake et al. [2003] performed full 3D PIC simulations with $M_i/m_e = 100$ to explore self-consistently the development of current-driven instabilities and anomalous resistivity. The study found that lower hybrid waves modulated the spacing of electron phase space holes.

Matsukiyo and Scholer [2006b] used a 2D PIC simulation with a realistic mass ratio to examine microinstabilities in the foot region of a supercritical shock (perpendicular). The dynamics of the shock foot evolved through the following steps:

1. The interaction between incident ions, electrons, and reflected ions lead to two different MTSIs, initially linear in growth.
2. In the linear growth phase, an electron cyclotron drift instability (ECDI) is excited by a BI which leads to perpendicular electron heating.
3. The perpendicular temperature anisotropy can give rise to a whistler instability (WI) and a double peaked electron distribution produced by electron holes can give rise to an electron acoustic instability (EAI). Both the WI and the EAI can contribute to parallel electron heating. They found the parallel energy gain to be much greater than the free energy available from the temperature anisotropy, thus they concluded the parallel electron heating was due to the EAI.
4. Due to the higher saturation levels of the two MTSIs, they become dominant after some delay.
5. The first MTSI, MTSI-1, which results from the interaction of the incident ions and electrons, is largely ES propagating roughly perpendicular to the magnetic field and primarily heats the incident ions which dominates the ion thermalization. However, MTSI-1 does not contribute much to electron thermalization and eventually leads to well defined ion phase space holes.
6. The second MTSI, MTSI-2, which results from the interaction of the reflected ions and electrons decelerated by MTSI-1, leads to large electron holes. The electron holes scatter and thermalize the electrons leading to a double peaked distribution, unstable to the EAI.
7. Thus two different two-step heating processes occur: 1) MTSI-2 $\rightarrow$ large electron holes $\rightarrow$ double peaked electron distributions $\rightarrow$ EAI $\rightarrow$ strong parallel electron heating and 2) ECDI $\rightarrow$ perpendicularly heats the electrons $\rightarrow$ WI $\rightarrow$ parallel heating to reduce the anisotropy in temperature.

Regardless, the increase in electron temperature is substantial with $T_{final,e}/T_{initial,e} \sim 5$. *Shimada and Hoshino* [2004] found electron phase-space holes to live longer and grow to larger amplitudes in more weakly magnetized plasmas due to a nonlinear evolution of the BI between reflected ions and incident electrons. They found the electron holes heat the electrons giving rise to IAWs which further heat the plasma.

Shimada and Hoshino [2005] studied the effects of strong thermalization on the dynamics of shock behavior above the critical Mach number. They also found the strong thermalization to result from a two stream instabilities between the incident electrons and reflected and/or incident ions. The ion distributions in the foot region were seen as diffuse and found to result from a nonlinear evolution of IAWs due to the interaction between incident ions and decelerated electrons.

Dyrud and Oppenheim [2006] examined electron holes generated by electron beams in simulations finding the holes to reduce the electron driven currents, thus a parallel resistivity. The electron holes scatter the beam, steepening the beam distribution, causing IAWs to grow. Then the IAWs cause strong perpendicular ion heating.

2. Theory and Discussion

Shimada and Hoshino [2003] examined electron-ion coupling dynamics in the shock transition region using a 1D PIC simulation where they found a relationship between upstream parameters and the magnitude of the electrostatic (ES) amplitude of the electric field of an electron hole excited by the Buneman instability (BI) between the incident electrons and reflected ions. They estimate the electric field of the electron holes to have an amplitude of roughly:

$$\frac{\delta E_x}{E_{yo}} = 2\frac{c}{V_A}\sqrt{\alpha\frac{m_e}{M_i}} \tag{1}$$

where α is a conversion ratio from the drift energy between the inflow electron and reflected ion (assumed to be $\sim$0.25 $\sim (\mathrm{m}_e/\mathrm{M}_i)^{1/3}$), V_A is the Alfvén speed, E_{yo} is the upstream motional electric field (= u_o/c B_o), and M_i and m_e are the ion and electron masses, respectively. The upstream plasma parameters for the 04/06/2000 event are: $\mathrm{V}_A = 64.81 \pm 10.17$ km/s, $\mathrm{u}_o = 278.10 \pm 8.30$ km/s, and $\mathrm{B}_o = 6.847 \pm 1.109$ nT. Thus, $\mathrm{E}_{yo} \sim 2$ mV/m $\ll \delta\mathrm{E}_x \sim 150$ mV/m for the solitary waves observed in this study. Note that the RHS of Equation 1 equals $\sim$ 50, which is slightly less than the ratio of $\delta\mathrm{E}_x/\mathrm{E}_{yo}$. However, they found that α could be as high as $\sim$0.37 which adjusts the RHS of Equation 1 to $\sim$ 65, much closer to our observed ratio of $\sim$75.

Acknowledgments. Here we put our acknowledgments...

References

Åsnes, A., R. W. Friedel, J. Stadsnes, M. Thomsen, N. Østgaard, and T. Cayton (2005a), Statistical pitch angle properties of substorm-injected electron clouds and their relation to dawnside energetic electron precipitation, *J. Geophys. Res.*, *110*, 5207–+, doi:10.1029/2004JA010838.

Åsnes, A., J. Stadsnes, R. W. Friedel, N. Østgaard, and M. Thomsen (2005b), Medium energy pitch angle distribution during substorm injected electron clouds, *Geophys. Res. Lett.*, *32*, 10,101–+, doi:10.1029/2004GL022008.

Abe, H., H. Okada, R. Itatani, M. Ono, and H. Okuda (1984), Resonant Heating Due to Cyclotron Subharmonic Frequency Waves, *Phys. Rev. Lett.*, *53*, 1153–1156, doi:10.1103/PhysRevLett.53.1153.

Acuña, M. H., D. Curtis, J. L. Scheifele, C. T. Russell, P. Schroeder, A. Szabo, and J. G. Luhmann (2008), The STEREO/IMPACT Magnetic Field Experiment, *Space Sci. Rev.*, *136*, 203–226, doi:10.1007/s11214-007-9259-2.

Akimoto, K., and D. Winske (1985), Ion-acoustic-like waves excited by the reflected ions at the earth's bow shock, *J. Geophys. Res.*, *90*, 12,095–+, doi:10.1029/JA090iA12p12095.

Akimoto, K., and D. Winske (1989), Nonlinear generation of whistler waves by an ion beam, *J. Geophys. Res.*, *94*, 17,259–17,265, doi:10.1029/JA094iA12p17259.

Akimoto, K., K. Papadopoulos, and D. Winske (1985a), Ion-acoustic instabilities driven by an ion velocity ring, *J. Plasma Phys.*, *34*, 467–479.

Akimoto, K., K. Papadopoulos, and D. Winske (1985b), Lower-hybrid instabilities driven by an ion velocity ring, *J. Plasma Phys.*, *34*, 445–465, doi:10.1017/S0022377800003007.

Akimoto, K., S. P. Gary, and N. Omidi (1987), Electron/ion whistler instabilities and magnetic noise bursts, *J. Geophys. Res.*, *92*, 11,209–11,214, doi:10.1029/JA092iA10p11209.

Akimoto, K., D. Winske, T. G. Onsager, M. F. Thomsen, and S. P. Gary (1991), Steepening of parallel propagating hydromagnetic waves into magnetic pulsations - A simulation study, *J. Geophys. Res.*, *96*, 17,599–+, doi:10.1029/91JA01603.

Akimoto, K., D. Winske, S. P. Gary, and M. F. Thomsen (1993), Nonlinear evolution of electromagnetic ion beam instabilities, *J. Geophys. Res.*, *98*, 1419–1433, doi:10.1029/92JA02345.

Albert, J. M. (2002), Nonlinear interaction of outer zone electrons with VLF waves, *Geophys. Res. Lett.*, *29*(8), 1275, doi:10.1029/2001GL013941.

Albert, J. M. (2008), Efficient approximations of quasi-linear diffusion coefficients in the radiation belts, *J. Geophys. Res.*, *113*, A06208, doi:10.1029/2007JA012936.

Albert, J. M., and J. Bortnik (2009), Nonlinear interaction of radiation belt electrons with electromagnetic ion cyclotron waves, *Geophys. Res. Lett.*, *36*, L12110, doi:10.1029/2009GL038904.

Albert, J. M., and S. L. Young (2005), Multidimensional quasi-linear diffusion of radiation belt electrons, *Geophys. Res. Lett.*, *32*, 14,110–+, doi:10.1029/2005GL023191.

Amano, T., and M. Hoshino (2007), Electron Injection at High Mach Number Quasi-perpendicular Shocks: Surfing and Drift Acceleration, *Astrophys. J.*, *661*, 190–202, doi:10.1086/513599.

Amano, T., and M. Hoshino (2009a), Electron Shock Surfing Acceleration in Multidimensions: Two-Dimensional Particle-in-Cell Simulation of Collisionless Perpendicular Shock, *Astrophys. J.*, *690*, 244–251, doi:10.1088/0004-637X/690/1/244.

Amano, T., and M. Hoshino (2009b), Nonlinear evolution of Buneman instability and its implication for electron acceleration in high Mach number collisionless perpendicular shocks, *Phys. Plasmas*, *16*(10), 102,901–+, doi:10.1063/1.3240336.

Amano, T., and M. Hoshino (2010), A Critical Mach Number for Electron Injection in Collisionless Shocks, *Phys. Rev. Lett.*, *104*, 181,102–+, doi:10.1103/PhysRevLett.104.181102.

Amato, E., and J. Arons (2006), Heating and Nonthermal Particle Acceleration in Relativistic, Transverse Magnetosonic Shock Waves in Proton-Electron-Positron Plasmas, *Astrophys. J.*, *653*, 325–338, doi:10.1086/508050.

Anderson, R. R. (1983), Plasma waves in planetary magnetospheres, *Rev. Geophys. Space Phys.*, *21*, 474–494.

Anderson, R. R., T. E. Eastman, C. C. Harvey, M. M. Hoppe, B. T. Tsurutani, and J. Etcheto (1982), Plasma waves near the magnetopause, *J. Geophys. Res.*, *87*, 2087–2107, doi:10.1029/JA087iA04p02087.

André, M., R. Behlke, J.-E. Wahlund, A. Vaivads, A.-I. Eriksson, A. Tjulin, T. D. Carozzi, C. Cully, G. Gustafsson, D. Sundkvist, Y. Khotyaintsev, N. Cornilleau-Wehrlin, L. Rezeau, M. Maksimovic, E. Lucek, A. Balogh, M. Dunlop, P.-A. Lindqvist, F. Mozer, A. Pedersen, and A. Fazakerley (2001), Multi-spacecraft observations of broadband waves near the lower hybrid frequency at the Earthward edge of the magnetopause, *Ann. Geophys.*, *19*, 1471–1481.

André, M., A. Vaivads, S. C. Buchert, A. N. Fazakerley, and A. Lahiff (2004), Thin electron-scale layers at the magnetopause, *Geophys. Res. Lett.*, *31*, 3803–+, doi:10.1029/2003GL018137.

Angelopoulos, V. (2008), The THEMIS Mission, *Space Sci. Rev.*, *141*, 5–34, doi:10.1007/s11214-008-9336-1.

Appert, K., T. M. Tran, and J. Vaclavik (1976a), Two-dimensional quasi-linear evolution of the electron-beam-plasma instability, *Phys. Rev. Lett.*, *37*, 502–504, doi:10.1103/PhysRevLett.37.502.

Appert, K., T. M. Tran, and J. Vaclavik (1976b), Finite element approximation for the wave-particle interaction in weakly turbulent plasmas, *Computer Phys. Comm.*, *12*, 135–144, doi:10.1016/0010-4655(76)90062-X.

Aptekar, R. L., D. D. Frederiks, S. V. Golenetskii, V. N. Ilynskii, E. P. Mazets, V. N. Panov, Z. J. Sokolova, M. M. Terekhov, L. O. Sheshin, T. L. Cline, and D. E. Stilwell (1995), Konus-W Gamma-Ray Burst Experiment for the GGS Wind Spacecraft, *Space Sci. Rev.*, *71*, 265–272, doi:10.1007/BF00751332.

Archer, M., T. S. Horbury, E. A. Lucek, C. Mazelle, A. Balogh, and I. Dandouras (2005), Size and shape of ULF waves in the terrestrial foreshock, *J. Geophys. Res.*, *110*, 5208–+, doi:10.1029/2004JA010791.

Archuleta, R. J., and S. E. Deforest (1971), Efficiency of Channel Electron Multipliers for Electrons of 1-50 keV, *Rev. Sci. Inst.*, *42*, 89–+, doi:10.1063/1.1684885.

Arima, S., M. Sugawa, and R. Sugaya (1980), Nonlinear amplitude oscillations of obliquely propagating Bernstein waves in a plasma, *J. Phys. Soc. Japan*, *49*, 1201–+, doi:10.1143/JPSJ.49.1201.

Armstrong, R. J., J. Trulsen, J. J. Rasmussen, and R. L. Stenzel (1981), Observations of obliquely propagating electron Bernstein waves, *Phys. Lett. A*, *85*, 281–284, doi:10.1016/0375-9601(81)90960-9.

Arons, A. B., and D. R. Yennie (1948), Energy Partition in Underwater Explosion Phenomena, *Rev. Mod. Phys.*, *20*, 519–536, doi:10.1103/RevModPhys.20.519.

Aschwanden, M. J. (2005), *Physics of the Solar Corona. An Introduction with Problems and Solutions (2nd edition)*, Springer.

Ashour-Abdalla, M., and C. F. Kennel (1978a), Nonconvective and convective electron cyclotron harmonic instabilities, *J. Geophys. Res.*, *83*, 1531–1543, doi:10.1029/JA083iA04p01531.

Ashour-Abdalla, M., and C. F. Kennel (1978b), Multi-harmonic electron cyclotron instabilities, *Geophys. Res. Lett.*, *5*, 711–714, doi:10.1029/GL005i008p00711.

Ashour-Abdalla, M., and H. Okuda (1986), Theory and simulations of broadband electrostatic noise in the geomagnetic tail, *J. Geophys. Res.*, *91*, 6833–6844, doi:10.1029/JA091iA06p06833.

Ashour-Abdalla, M., C. F. Kennel, and W. Livesey (1979), A parametric study of electron multiharmonic instabilities in the magnetosphere, *J. Geophys. Res.*, *84*, 6540–6546, doi:10.1029/JA084iA11p06540.

Ashour-Abdalla, M., J. N. Leboeuf, J. M. Dawson, and C. F. Kennel (1980), A simulation study of cold electron heating by loss cone instabilities, *Geophys. Res. Lett.*, *7*, 889–892, doi:10.1029/GL007i011p00889.

Ashour-Abdalla, M., J. N. Leboeuf, D. Schriver, J.-M. Bosqued, N. Cornilleau-Wehrlin, V. Sotnikov, A. Marchaudon, and A. N. Fazakerley (2006), Instabilities driven by ion shell distributions observed by Cluster in the midaltitude plasma sheet boundary layer, *J. Geophys. Res.*, *111*, 10,223–+, doi:10.1029/2005JA011490.

Auer, P. L., H. Hurwitz, Jr., and R. W. Kilb (1962), Large-Amplitude Magnetic Compression of a Collision-Free Plasma. II. Development of a Thermalized Plasma, *Phys. Fluids*, *5*, 298–316, doi:10.1063/1.1706615.

Auer, P. L., R. W. Kilb, and W. F. Crevier (1971), Thermalization in the earth's bow shock., *J. Geophys. Res.*, *76*, 2927–2939, doi:10.1029/JA076i013p02927.

Auster, H. U., K. H. Glassmeier, W. Magnes, O. Aydogar, W. Baumjohann, D. Constantinescu, D. Fischer, K. H. Fornacon, E. Georgescu, P. Harvey, O. Hillenmaier, R. Kroth, M. Ludlam, Y. Narita, R. Nakamura, K. Okrafka, F. Plaschke, I. Richter, H. Schwarzl, B. Stoll, A. Valavanoglou, and M. Wiedemann (2008), The THEMIS Fluxgate Magnetometer, *Space Sci. Rev.*, *141*, 235–264, doi:10.1007/s11214-008-9365-9.

Axford, W. I., E. Marsch, V. N. Oraevsky, V. D. Kuznetsov, T. K. Breus, R. Scwenn, W.-H. Ip, L. V. Ksanfomality, N. Thomas, A. Kogan, V. F. Utkin, and G. R. Uspensky (1998), Space mission for exploration of the sun, mercury and inner heliosphere ("InterHelios"), *Adv. Space Res.*, *21*, 275–289, doi:10.1016/S0273-1177(97)00984-8.

Backrud, M., A. Tjulin, A. Vaivads, M. André, and A. Fazakerley (2005), Interferometric identification of ion acoustic broadband waves in the auroral region: CLUSTER observations, *Geophys. Res. Lett.*, *32*, 21,109–+, doi:10.1029/2005GL022640.

Bale, S. D., and F. S. Mozer (2007), Measurement of Large Parallel and Perpendicular Electric Fields on Electron Spatial Scales in the Terrestrial Bow Shock, *Phys. Rev. Lett.*, *98*, 205,001–+, doi:10.1103/PhysRevLett.98.205001.

Bale, S. D., D. Burgess, P. J. Kellogg, K. Goetz, R. L. Howard, and S. J. Monson (1996), Phase coupling in Langmuir wave packets: Possible evidence of three-wave interactions in the upstream solar wind, *Geophys. Res. Lett.*, *23*, 109–112, doi:10.1029/95GL03595.

Bale, S. D., D. Burgess, P. J. Kellogg, K. Goetz, and S. J. Monson (1997), On the amplitude of intense Langmuir waves in the terrestrial electron foreshock, *J. Geophys. Res.*, *102*, 11,281–11,286, doi:10.1029/97JA00938.

Bale, S. D., P. J. Kellogg, D. E. Larson, R. P. Lin, K. Goetz, and R. P. Lepping (1998a), Bipolar electrostatic structures in the shock transition region: Evidence of electron phase space holes, *Geophys. Res. Lett.*, *25*, 2929–2932, doi:10.1029/98GL02111.

Bale, S. D., P. J. Kellogg, K. Goetz, and S. J. Monson (1998b), Transverse z-mode waves in the terrestrial electron foreshock, *Geophys. Res. Lett.*, *25*, 9–12, doi:10.1029/97GL03493.

Bale, S. D., P. J. Kellogg, K. N. Erickson, S. J. Monson, and R. L. Arnoldy (1998c), Ponderomotive lower hybrid wave growth in electric fields associated with electron beam injection and transverse ion acceleration, *Adv. Space Res.*, *21*, 735–738, doi:10.1016/S0273-1177(97)01014-4.

Bale, S. D., M. J. Reiner, J.-L. Bougeret, M. L. Kaiser, S. Krucker, D. E. Larson, and R. P. Lin (1999), The source region of an interplanetary type II radio burst, *Geophys. Res. Lett.*, *26*, 1573–1576, doi:10.1029/1999GL900293.

Bale, S. D., D. E. Larson, R. P. Lin, P. J. Kellogg, K. Goetz, and S. J. Monson (2000), On the beam speed and wavenumber of intense electron plasma waves near the foreshock edge, *J. Geophys. Res.*, *105*, 27,353–27,368, doi:10.1029/2000JA900042.

Bale, S. D., A. Hull, D. E. Larson, R. P. Lin, L. Muschietti, P. J. Kellogg, K. Goetz, and S. J. Monson (2002a), Electrostatic Turbulence and Debye-Scale Structures Associated with Electron Thermalization at Collisionless Shocks, *Astrophys. J.*, *575*, L25–L28, doi:10.1086/342609.

Bale, S. D., F. S. Mozer, and T. Phan (2002b), Observation of lower hybrid drift instability in the diffusion region at a reconnecting magnetopause, *Geophys. Res. Lett.*, *29*, 240,000–1, doi:10.1029/2002GL016113.

Bale, S. D., F. S. Mozer, and T. S. Horbury (2003), Density-Transition Scale at Quasiperpendicular Collisionless Shocks, *Phys. Rev. Lett.*, *91*, 265,004–+, doi:10.1103/PhysRevLett.91.265004.

Bale, S. D., M. A. Balikhin, T. S. Horbury, V. V. Krasnoselskikh, H. Kucharek, E. Möbius, S. N. Walker, A. Balogh, D. Burgess, B. Lembège, E. A. Lucek, M. Scholer, S. J. Schwartz7 10, and M. F. Thomsen (2005a), Quasi-perpendicular Shock Structure and Processes, *Space Sci. Rev.*, *118*, 161–203, doi:10.1007/s11214-005-3827-0.

Bale, S. D., P. J. Kellogg, F. S. Mozer, T. S. Horbury, and H. Reme (2005b), Measurement of the Electric Fluctuation Spectrum of Magnetohydrodynamic Turbulence, *Phys. Rev. Lett.*, *94*(21), 215,002, doi:10.1103/PhysRevLett.94.215002.

Bale, S. D., R. Ullrich, K. Goetz, N. Alster, B. Cecconi, M. Dekkali, N. R. Lingner, W. Macher, R. E. Manning, J. McCauley, S. J. Monson, T. H. Oswald, and M. Pulupa (2008a), The Electric Antennas for the STEREO/WAVES Experiment, *Space Sci. Rev.*, *136*, 529–547, doi:10.1007/s11214-007-9251-x.

Bale, S. D., F. S. Mozer, and V. V. Krasnoselskikh (2008b), Direct measurement of the cross-shock electric potential at low plasma β, quasi-perpendicular bow shocks, *ArXiv e-prints*.

Bale, S. D., J. C. Kasper, G. G. Howes, E. Quataert, C. Salem, and D. Sundkvist (2009), Magnetic Fluctuation Power Near Proton Temperature Anisotropy Instability Thresholds in the Solar Wind, *Phys. Rev. Lett.*, *103*, 211,101–+, doi:10.1103/PhysRevLett.103.211101.

Balikhin, M., V. Krasnosselskikh, and M. Gedalin (1995a), The scales in quasiperpendicular shocks, *Adv. Space Res.*, *15*, 247–260, doi:10.1016/0273-1177(94)00105-A.

Balikhin, M., V. Krasnosselskikh, and M. Gedalin (1995b), The scales in quasiperpendicular shocks, *Adv. Space Res.*, *15*, 247–260, doi:10.1016/0273-1177(94)00105-A.

Balikhin, M., S. Walker, R. Treumann, H. Alleyne, V. Krasnoselskikh, M. Gedalin, M. Andre, M. Dunlop, and A. Fazakerley (2005), Ion sound wave packets at the quasiperpendicular shock front, *Geophys. Res. Lett.*, *32*, 24,106–+, doi:10.1029/2005GL024660.

Balikhin, M. A., and W. P. Wilkinson (1996), Ion heating within the ramp of quasi-perpendicular subcritical collisionless shocks, *Geophys. Res. Lett.*, *23*, 1063–1066, doi:10.1029/96GL01108.

Balikhin, M. A., V. V. Krasnosel'Skikh, and L. J. C. Woolliscroft (1995c), Electron Dynamics in an Inhomogeneous Electric Field and the Scales of Boundaries, in *Proc. of the Cluster Workshops, Data Analysis Tools and Physical Measurements and Mission-Oriented Theory*, *ESA Special Publication*, vol. 371, edited by K.-H. Glassmeier, U. Motschmann, & R. Schmidt, pp. 273–+.

Balikhin, M. A., T. D. de Wit, H. S. C. K. Alleyne, L. J. C. Woolliscroft, S. N. Walker, V. Krasnosel'skikh, W. A. C. Mier-Jedrzejeowicz, and W. Baumjohann (1997a), Experimental determination of the dispersion of waves observed upstream of a quasi-perpendicular shock, *Geophys. Res. Lett.*, *24*, 787–790, doi:10.1029/97GL00671.

Balikhin, M. A., L. J. C. Woolliscroft, H. S. C. Alleyne, M. Dunlop, and M. A. Gedalin (1997b), Determination of the dispersion of low frequency waves downstream of a quasiperpendicular collisionless shock, *Ann. Geophys.*, *15*, 143–151, doi:10.1007/s005850050429.

Balikhin, M. A., H. S.-C. K. Alleyne, R. A. Treumann, M. N. Nozdrachev, S. N. Walker, and W. Baumjohann (1999), The role of nonlinear interaction in the formation of LF whistler turbulence upstream of a quasi-perpendicular shock, *J. Geophys. Res.*, *104*, 12,525–12,536, doi:10.1029/1998JA900102.

Balikhin, M. A., S. Schwartz, S. N. Walker, H. S. C. K. Alleyne, M. Dunlop, and H. Lühr (2001), Dual-spacecraft observations of standing waves in the magnetosheath, *J. Geophys. Res.*, *106*, 25,395–25,408, doi:10.1029/2000JA900096.

Balikhin, M. A., M. Nozdrachev, M. Dunlop, V. Krasnosel'skikh, S. N. Walker, H. S. C. K. Alleyne, V. Formisano, M. Andre, A. Balogh, A. Eriksson, and K. Yearby (2002), Observation of the terrestrial bow shock in quasi-electrostatic subshock regime, *J. Geophys. Res.*, *107*, 1155, doi:10.1029/2001JA000327.

Balikhin, M. A., O. A. Pokhotelov, S. N. Walker, E. Amata, M. Andre, M. Dunlop, and H. S. C. K. Alleyne (2003a), Minimum variance free wave identification: Application to Cluster electric field data in the magnetosheath, *Geophys. Res. Lett.*, *30*(10), 100,000–1, doi:10.1029/2003GL016918.

Balikhin, M. A., O. A. Pokhotelov, S. N. Walker, and M. Andre (2003b), Identification of low frequency waves in the vicinity of the terrestrial bow shock, *Planet. Space Sci.*, *51*, 693–702.

Balogh, A., S. J. Schwartz, S. D. Bale, M. A. Balikhin, D. Burgess, T. S. Horbury, V. V. Krasnoselskikh, H. Kucharek, B. Lembège, E. A. Lucek, E. Möbius, M. Scholer, M. F. Thomsen, and S. N. Walker (2005), Cluster at the Bow Shock: Introduction, *Space Sci. Rev.*, *118*, 155–160, doi:10.1007/s11214-005-3826-1.

Bame, S. J., J. R. Asbridge, J. T. Gosling, M. Halbig, G. Paschmann, N. Sckopke, and H. Rosenbauer (1979), High temporal resolution observations of electron heating at the bow shock, *Space Sci. Rev.*, *23*, 75–92, doi:10.1007/BF00174112.

Bame, S. J., J. R. Asbridge, W. C. Feldman, J. T. Gosling, G. Paschmann, and N. Skopke (1980), Deceleration of the solar wind upstream from the earth's bow shock and the origin of diffuse upstream ions, *J. Geophys. Res.*, *85*, 2981–2990, doi:10.1029/JA085iA06p02981.

Barbosa, D. D. (1980), On the convective properties of magnetospheric Bernstein waves, *J. Geophys. Res.*, *85*, 2341–2345, doi:10.1029/JA085iA05p02341.

Barbosa, D. D. (1982), Low-Level VLF and LF Radio Emissions Observed at Earth and Jupiter, *Rev. Geophys.*, *20*, 316–334, doi:10.1029/RG020i002p00316.

Barbosa, D. D., and W. S. Kurth (1980), Superthermal electrons and Bernstein waves in Jupiter's inner magnetosphere, *J. Geophys. Res.*, *85*, 6729–6742, doi:10.1029/JA085iA12p06729.

Barbosa, D. D., and W. S. Kurth (1993), On the generation of plasma waves in Saturn's inner magnetosphere, *J. Geophys. Res.*, *98*, 9351–9356, doi:10.1029/93JA00477.

Barbosa, D. D., W. S. Kurth, I. H. Cairns, D. A. Gurnett, and R. L. Poynter (1990), Electrostatic electron and ion cyclotron harmonic waves in Neptune's magnetosphere, *Geophys. Res. Lett.*, *17*, 1657–1660, doi:10.1029/GL017i010p01657.

Barbosa, D. D., W. S. Kurth, D. A. Gurnett, and E. C. Sittler, Jr. (1993), Electrotastic wave excitation in planetary magnetospheres: Application to Neptune, *J. Geophys. Res.*, *98*, 19,465–+, doi:10.1029/93JA01988.

Baring, M. G., and E. J. Summerlin (2009), Particle Acceleration at Relativistic Shocks in Extragalactic Systems, in *American Institute of Physics Conference Series*, *American Institute of Physics Conference Series*, vol. 1183, edited by X. Ao & G. Z. R. Burrows, pp. 74–84, doi:10.1063/1.3266787.

Barkhausen, H. (1919), Zwei mit Hilfe der neuen Verstarker entdeckte Ersheinungen, *Phys. Zeitschrift*, *20*, 401–403.

Barrel Team Millan, R. M. (2011), Understanding relativistic electron losses with BARREL, *J. Atmos. Solar-Terr. Phys.*, *73*, 1425–1434, doi:10.1016/j.jastp.2011.01.006.

Battarbee, M., T. Laitinen, R. Vainio, and N. Agueda (2010), Acceleration of Energetic Particles Through Self-Generated Waves in a Decelerating Coronal Shock, *Twelfth International Solar Wind Conference*, *1216*, 84–87, doi:10.1063/1.3395969.

Baumjohann, W., and R. A. Treumann (1996), *Basic space plasma physics*, Imperial College Press.

Baumjohann, W., R. A. Treumann, E. Georgescu, G. Haerendel, K.-H. Fornacon, and U. Auster (1999), Waveform and packet structure of lion roars, *Ann. Geophys.*, *17*, 1528–1534, doi:10.1007/s00585-999-1528-9.

Bavassano-Cattaneo, M. B., C. Bonifazi, M. Dobrowolny, G. Moreno, and C. T. Russell (1983), Distribution of MHD wave activity in the foreshock region and properties of backstreaming protons, *J. Geophys. Res.*, *88*, 9280–9286, doi:10.1029/JA088iA11p09280.

Bavassano-Cattaneo, M. B., B. T. Tsurutani, E. J. Smith, and R. P. Lin (1986), Subcritical and supercritical interplanetary shocks - Magnetic field and energetic particle observations, *J. Geophys. Res.*, *91*, 11,929–11,935, doi:10.1029/JA091iA11p11929.

Bavassano-Cattaneo, M. B., G. Moreno, M. T. Scotto, and M. Acuna (1987), Observations of large-amplitude MHD waves in Jupiter's foreshock in connection with a quasi-perpendicular shock structure, *J. Geophys. Res.*, *92*, 12,413–12,418, doi:10.1029/JA092iA11p12413.

Begenal, F., J. W. Belcher, E. C. Sittler, and R. P. Lepping (1987), The Uranian bow shock - Voyager 2 inbound observations of a high Mach number shock, *J. Geophys. Res.*, *92*, 8603–8612, doi:10.1029/JA092iA08p08603.

Behlke, R., M. André, S. C. Buchert, A. Vaivads, A. I. Eriksson, E. A. Lucek, and A. Balogh (2003), Multi-point electric field measurements of Short Large-Amplitude Magnetic Structures (SLAMS) at the Earth's quasi-parallel bow shock, *Geophys. Res. Lett.*, *30*(4), 040,000–1, doi:10.1029/2002GL015871.

Behlke, R., M. André, S. D. Bale, J. S. Pickett, C. A. Cattell, E. A. Lucek, and A. Balogh (2004), Solitary structures associated with short large-amplitude magnetic structures (SLAMS) upstream of the Earth's quasi-parallel bow shock, *Geophys. Res. Lett.*, *31*, 16,805–+, doi:10.1029/2004GL019524.

Beinroth, H. J., and F. M. Neubauer (1981), Properties of whistler mode waves between 0.3 and 1.0 AU from HELIOS observations, *J. Geophys. Res.*, *86*, 7755–7760, doi:10.1029/JA086iA09p07755.

Bekshtein, G. E., and R. Z. Sagdeev (1970), Anomalous Resistance of a Plasma in the Case of Ion-acoustic Turbulence, *Sov. Phys.–JETP*, *11*, 194–+.

Bell, T. F. (1965), Nonlinear Alfvén Waves in a Vlasov Plasma, *Phys. Fluids*, *8*, 1829–1839, doi:10.1063/1.1761115.

Bell, T. F. (1984), The nonlinear gyroresonance interaction between energetic electrons and coherent VLF waves propagating at an arbitrary angle with respect to the earth's magnetic field, *J. Geophys. Res.*, *89*, 905–918, doi:10.1029/JA089iA02p00905.

Bell, T. F. (1986), The wave magnetic field amplitude threshold for nonlinear trapping of energetic gyroresonant and Landau resonant electrons by nonducted VLF waves in the magnetosphere, *J. Geophys. Res.*, *91*, 4365–4379, doi:10.1029/JA091iA04p04365.

Bell, T. F., and O. Buneman (1964), Plasma Instability in the Whistler Mode Caused by a Gyrating Electron Stream, *Phys. Rev.*, *133*, 1300–1302, doi:10.1103/PhysRev.133.A1300.

Bell, T. F., and H. D. Ngo (1988), Electrostatic waves stimulated by coherent VLF signals propagating in and near the inner radiation belt, *J. Geophys. Res.*, *93*, 2599–2618, doi:10.1029/JA093iA04p02599.

Bell, T. F., and H. D. Ngo (1990), Electrostatic lower hybrid waves excited by electromagnetic whistler mode waves scattering from planar magnetic-field-aligned plasma density irregularities, *J. Geophys. Res.*, *95*, 149–172, doi:10.1029/JA095iA01p00149.

Bell, T. F., U. S. Inan, and R. A. Helliwell (1981), Nonducted coherent VLF waves and associated triggered emissions observed on the ISEE-1 satellite, *J. Geophys. Res.*, *86*, 4649–4670, doi:10.1029/JA086iA06p04649.

Bell, T. F., U. S. Inan, J. P. Katsufrakis, and H. G. James (1983), The apparent spectral broadening of VLF transmitter signals during transionospheric propagation, *J. Geophys. Res.*, *88*, 4813–4840, doi:10.1029/JA088iA06p04813.

Bell, T. F., U. S. Inan, N. Haque, and J. S. Pickett (2009), Source regions of banded chorus, *Geophys. Res. Lett.*, *36*, 11,101–+, doi:10.1029/2009GL037629.

Benford, G. (1983), Turbulent resistive heating of solar coronal arches, *Astrophys. J.*, *269*, 690–697, doi:10.1086/161078.

Berezin, Y. A., and R. Z. Sagdeev (1966), Theory of nonlinear waves in a plasma, *J. Appl. Mech. Tech. Phys.*, *7*, 1–3, doi:10.1007/BF00916962.

Berezin, Y. A., G. I. Dudnikova, V. G. Eselevich, and R. K. Kurtmullaev (1969), Structure of oblique shock wave at high mach numbers, *J. Appl. Mech. Tech. Phys.*, *10*, 617–622, doi:10.1007/BF00916221.

Bernstein, I. B. (1958), Waves in a Plasma in a Magnetic Field, *Phys. Rev.*, *109*, 10–21, doi:10.1103/PhysRev.109.10.

Bernstein, I. B., J. M. Greene, and M. D. Kruskal (1957), Exact Nonlinear Plasma Oscillations, *Phys. Rev.*, *108*, 546–550, doi:10.1103/PhysRev.108.546.

Berthomier, M., L. Muschietti, J. W. Bonnell, I. Roth, and C. W. Carlson (2002), Interaction between electrostatic whistlers and electron holes in the auroral region, *J. Geophys. Res.*, *107*, 1463–+, doi:10.1029/2002JA009303.

Berthomier, M., R. Pottelette, L. Muschietti, I. Roth, and C. W. Carlson (2003), Scaling of 3D solitary waves observed by FAST and POLAR, *Geophys. Res. Lett.*, *30*(22), 220,000–1, doi:10.1029/2003GL018491.

Berthomier, M., G. Dubois, and L. Muschietti (2008), Stability of three-dimensional electron holes, *Phys. Plasmas*, *15*, 112,901–+, doi:10.1063/1.3013452.

Bertucci, C., N. Achilleos, C. T. Russell, M. K. Dougherty, E. J. Smith, M. Burton, B. T. Tsurutani, and C. Mazelle (2005), Bow Shock and Upstream Waves at Jupiter and Saturn: Cassini Magnetometer Observations, in *The Physics of Collisionless Shocks: 4th Annual IGPP International Astrophysics Conference*, *American Institute of Physics Conference Series*, vol. 781, edited by G. Li, G. P. Zank, and C. T. Russell, pp. 109–115, doi:10.1063/1.2032682.

Bertucci, C., N. Achilleos, C. Mazelle, G. B. Hospodarsky, M. Thomsen, M. K. Dougherty, and W. Kurth (2007), Low-frequency waves in the foreshock of Saturn: First results from Cassini, *J. Geophys. Res.*, *112*, 9219–+, doi:10.1029/2006JA012098.

Bingham, R., J. M. Dawson, and V. D. Shapiro (2002), Particle acceleration by lower-hybrid turbulence, *J. Plasma Phys.*, *68*, 161–172, doi:10.1017/S0022377802001939.

Bingham, R., V. D. Shapiro, and P. K. Shukla (2005), Acceleration of Particles by Lower-Hybrid Waves in Space Plasmas, in *Multiscale Coupling of Sun-Earth Processes*, edited by A. T. Y. Liu, Y. Kamide, & G. Consolini, pp. 343–+.

Biskamp, D. (1972), On conventional and unconventional theory of ion-sound turbulence, *Nucl. Fusion*, *12*, 85, doi:10.1088/0029-5515/12/1/008.

Biskamp, D. (1973), Collisionless shock waves in plasmas, *Nucl. Fusion*, *13*, 719, doi:10.1088/0029-5515/13/5/010.

Biskamp, D. (1984), Anomalous resistivity and viscosity due to small-scale magnetic turbulence, *Plasma Physics and Controlled Fusion*, *26*, 311–319, doi:10.1088/0741-3335/26/1B/004.

Biskamp, D., and R. Chodura (1972), On the non-linear electron-cyclotron drift instability, *Nucl. Fusion*, *12*, 485, doi:10.1088/0029-5515/12/4/010.

Biskamp, D., and R. Chodura (1973), Collisionless dissipation of a cross-field electric current, *Phys. Fluids*, *16*, 893–901, doi:10.1063/1.1694442.

Biskamp, D., and H. Welter (1972a), Ion Heating in High-Mach-Number, Oblique, Collisionless Shock Waves, *Phys. Rev. Lett.*, *28*, 410–413, doi:10.1103/PhysRevLett.28.410.

Biskamp, D., and H. Welter (1972b), Structure of the earth's bow shock., *J. Geophys. Res.*, *77*, 6052–6059, doi:10.1029/JA077i031p06052.

Biskamp, D., and H. Welter (1972c), On the validity of the quasi-linear approximation for turbulent plasmas, *Nucl. Fusion*, *12*, 89, doi:10.1088/0029-5515/12/1/009.

Biskamp, D., and H. Welter (1972d), Numerical studies of magnetosonic collisionless shock waves, *Nucl. Fusion*, *12*, 663, doi:10.1088/0029-5515/12/6/006.

Biskamp, D., K. U. von Hagenow, and H. Welter (1972), Computer studies of current-driven ion-sound turbulence in three dimensions, *Phys. Lett. A*, *39*, 351–352, doi:10.1016/0375-9601(72)90090-4.

Biskamp, D., R. Chodura, and C. T. Dum (1975), Ion - sound spectrum and wave - electron interaction in perpendicular shocks, *Phys. Rev. Lett.*, *34*, 131–134, doi:10.1103/PhysRevLett.34.131.

Biskamp, D., P. H. Diamond, X. Garbet, Z. Lin, J. Nührenberg, and R. N. Rogers (2000), First principles based transport theory, *Nucl. Fusion*, *40*, 873, doi:10.1088/0029-5515/40/4/411.

Blackwell, D. E., and D. W. Dewhirst (1959), Kellogg and Ney's Model of the Solar Corona, *Nature*, *184*, 1120–1122, doi:10.1038/1841120a0.

Blake, J. B., M. D. Looper, D. N. Baker, R. Nakamura, B. Klecker, and D. Hovestadt (1996), New high temporal and spatial resolution measurements by SAMPEX of the precipitation of relativistic electrons, *Adv. Space Res.*, *18*, 171–186.

Blanco-Cano, X. (2010), Bow Shocks In The Solar Wind: Lessons Towards Understanding Interplanetary Shocks, *Twelfth International Solar Wind Conference*, *1216*, 459–465, doi:10.1063/1.3395903.

Blanco-Cano, X., N. Omidi, and C. T. Russell (2006), Macrostructure of collisionless bow shocks: 2. ULF waves in the foreshock and magnetosheath, *J. Geophys. Res.*, *111*, 10,205–+, doi:10.1029/2005JA011421.

Blandford, R., and D. Eichler (1987), Particle acceleration at astrophysical shocks: A theory of cosmic ray origin, *Phys. Rep.*, *154*, 1–75, doi:10.1016/0370-1573(87)90134-7.

Bohm, D., and E. P. Gross (1949a), Theory of Plasma Oscillations. A. Origin of Medium-Like Behavior, *Phys. Rev.*, *75*, 1851–1864, doi:10.1103/PhysRev.75.1851.

Bohm, D., and E. P. Gross (1949b), Theory of Plasma Oscillations. B. Excitation and Damping of Oscillations, *Phys. Rev.*, *75*, 1864–1876, doi:10.1103/PhysRev.75.1864.

Bonifazi, C., and G. Moreno (1981a), Reflected and diffuse ions backstreaming from the earth's bow shock. I Basic properties, *J. Geophys. Res.*, *86*, 4397–4413, doi:10.1029/JA086iA06p04397.

Bonifazi, C., and G. Moreno (1981b), Reflected and diffuse ions backstreaming from the earth's bow shock 2. Origin, *J. Geophys. Res.*, *86*, 4405–4414, doi:10.1029/JA086iA06p04405.

Bonifazi, C., G. Moreno, and C. T. Russell (1983), Reflection of the solar wind ions at the earth's bow shock Energization, *J. Geophys. Res.*, *88*, 7853–7859, doi:10.1029/JA088iA10p07853.

Bonnell, J. W., F. S. Mozer, G. T. Delory, A. J. Hull, R. E. Ergun, C. M. Cully, V. Angelopoulos, and P. R. Harvey (2008), The Electric Field Instrument (EFI) for THEMIS, *Space Sci. Rev.*, *141*, 303–341, doi:10.1007/s11214-008-9469-2.

Bordoni, F. (1971), Channel electron multiplier efficiency for 10-1000 eV electrons, *Nucl. Inst. & Meth.*, *97*, 405–+, doi:10.1016/0029-554X(71)90300-4.

Bortnik, J., and R. M. Thorne (2007), The dual role of ELF/VLF chorus waves in the acceleration and precipitation of radiation belt electrons, *J. Atmos. Solar-Terr. Phys.*, *69*, 378–386, doi:10.1016/j.jastp.2006.05.030.

Bortnik, J., U. S. Inan, and T. F. Bell (2006), Landau damping and resultant unidirectional propagation of chorus waves, *Geophys. Res. Lett.*, *33*, 3102–+, doi:10.1029/2005GL024553.

Bortnik, J., R. M. Thorne, and N. P. Meredith (2007a), Modeling the propagation characteristics of chorus using CRRES suprathermal electron fluxes, *J. Geophys. Res.*, *112*, 8204–+, doi:10.1029/2006JA012237.

Bortnik, J., R. M. Thorne, N. P. Meredith, and O. Santolík (2007b), Ray tracing of penetrating chorus and its implications for the radiation belts, *Geophys. Res. Lett.*, *34*, 15,109–+, doi:10.1029/2007GL030040.

Bortnik, J., R. M. Thorne, and U. S. Inan (2008), Nonlinear interaction of energetic electrons with large amplitude chorus, *Geophys. Res. Lett.*, *35*, 21,102–+, doi:10.1029/2008GL035500.

Bortnik, J., W. Li, R. M. Thorne, V. Angelopoulos, C. Cully, J. Bonnell, O. Le Contel, and A. Roux (2009), An Observation Linking the Origin of Plasmaspheric Hiss to Discrete Chorus Emissions, *Science*, *324*, 775–, doi:10.1126/science.1171273.

Boteler, D. H., R. J. Pirjola, and H. Nevanlinna (1998), The effects of geomagnetic disturbances on electrical systems at the earth's surface, *Adv. Space Res.*, *22*, 17–27, doi:10.1016/S0273-1177(97)01096-X.

Bougeret, J.-L. (1985), Observations of shock formation and evolution in the solar atmosphere, in *Collisionless Shocks in the Heliosphere: Reviews of Current Research, Geophys. Monogr. Ser.*, vol. 35, edited by B. T. Tsurutani and R. G. Stone, pp. 13–32, AGU, Washington, D.C.

Bougeret, J.-L., M. L. Kaiser, P. J. Kellogg, R. Manning, K. Goetz, S. J. Monson, N. Monge, L. Friel, C. A. Meetre, C. Perche, L. Sitruk, and S. Hoang (1995), Waves: The Radio and Plasma Wave Investigation on the Wind Spacecraft, *Space Sci. Rev.*, *71*, 231–263, doi:10.1007/BF00751331.

Bougeret, J. L., K. Goetz, M. L. Kaiser, S. D. Bale, P. J. Kellogg, M. Maksimovic, N. Monge, S. J. Monson, P. L. Astier, S. Davy, M. Dekkali, J. J. Hinze, R. E. Manning, E. Aguilar-Rodriguez, X. Bonnin, C. Briand, I. H. Cairns, C. A. Cattell, B. Cecconi, J. Eastwood, R. E. Ergun, J. Fainberg, S. Hoang, K. E. J. Huttunen, S. Krucker, A. Lecacheux, R. J. MacDowall, W. Macher, A. Mangeney, C. A. Meetre, X. Moussas, Q. N. Nguyen, T. H. Oswald, M. Pulupa, M. J. Reiner, P. A. Robinson, H. Rucker, C. Salem, O. Santolík, J. M. Silvis, R. Ullrich, P. Zarka, and I. Zouganelis (2008), S/WAVES: The Radio and Plasma Wave Investigation on the STEREO Mission, *Space Sci. Rev.*, *136*, 487–528, doi:10.1007/s11214-007-9298-8.

Brain, D. A., F. Bagenal, M. H. Acuña, J. E. P. Connerney, D. H. Crider, C. Mazelle, D. L. Mitchell, and N. F. Ness (2002), Observations of low-frequency electromagnetic plasma waves upstream from the Martian shock, *J. Geophys. Res.*, *107*, 1076–+, doi:10.1029/2000JA000416.

Breech, B., W. H. Matthaeus, S. R. Cranmer, J. C. Kasper, and S. Oughton (2009), Electron and proton heating by solar wind turbulence, *J. Geophys. Res.*, *114*, 9103–+, doi:10.1029/2009JA014354.

Breech, B., S. R. Cranmer, W. H. Matthaeus, J. C. Kasper, and S. Oughton (2010), Heating of the solar wind with electron and proton effects, *Twelfth International Solar Wind Conference*, *1216*, 214–217, doi:10.1063/1.3395840.

Brehm, B., J. Grosser, T. Ruscheinski, and M. Zimmer (1995), Absolute detection efficiencies of a microchannel plate detector for ions, *Meas. Sci. Technol.*, *6*, 953–958, doi:10.1088/0957-0233/6/7/015.

Breneman, A., C. Cattell, S. Schreiner, K. Kersten, L. B. Wilson III, P. Kellogg, K. Goetz, and L. K. Jian (2010a), Observations of large-amplitude, narrowband whistlers at stream interaction regions, *J. Geophys. Res.*, *115*, A08,104, doi:10.1029/2009JA014920.

Breneman, A., C. A. Cattell, K. Kersten, L. B. Wilson III, S. Schreiner, L. Jian, P. J. Kellogg, and K. Goetz (2010b), Observations of Large Amplitude, Narrowband Whistlers at Stream Interaction Regions, *APS Meeting Abstracts*, pp. 10,009–+.

Breneman, A. W., C. A. Cattell, K. Kersten, L. B. Wilson III, P. J. Kellogg, S. Schreiner, and K. Goetz (2009a), Observations of Large Amplitude, Monochromatic Whistlers at Stream Interaction Regions, *AGU Fall Meeting Abstracts*, pp. B1524+.

Breneman, A. W., C. A. Kletzing, J. Pickett, J. Chum, and O. Santolík (2009b), Statistics of multispacecraft observations of chorus dispersion and source location, *J. Geophys. Res.*, *114*, 6202–+, doi:10.1029/2008JA013549.

Breneman, A. W., C. A. Cattell, J. R. Wygant, K. Kersten, L. B. Wilson III, P. J. Kellogg, and K. Goetz (2010c), Extremely Large Amplitude Whistler Waves in the Earth's Inner Radiation Belt, *AGU Fall Meeting Abstracts*, pp. C5+.

Breneman, A. W., C. A. Cattell, J. R. Wygant, K. Kersten, L. B. Wilson III, S. Schreiner, P. J. Kellogg, and K. Goetz (2011a), Large Amplitude Transmitter- and Lightning-Associated Whistler Waves in the Earth's Inner Plasmasphere at L < 2, *J. Geophys. Res.*, *116*, A06,310, doi:10.1029/2010JA016288.

Breneman, A. W., C. A. Cattell, J. R. Wygant, K. Kersten, L. B. Wilson III, P. J. Kellogg, K. Goetz, and S. Schreiner (2011b), Large Amplitude Transmitter- and Lightning-Associated Whistler Waves in Earth's Inner Plasmasphere at L < 2, chapman Conference: Dynamics of the Earth's Radiation Belts and Inner Magnetosphere, July 17-22, 2011.

Breneman, A. W., C. A. Cattell, L. B. Wilson III, K. Kersten, and K. Goetz (2011c), STEREO observations of large amplitude electrostatic waves at the Earth's bowshock, *AGU Fall Meeting Abstracts*, pp. B2061+, presented work on polarization reversals, not related to title.

Breneman, A. W., C. A. Cattell, J. R. Wygant, K. Kersten, L. B. Wilson III, L. Dai, C. Colpitts, P. J. Kellogg, K. Goetz, and A. Paradise (2012a), Explaining Polarization Reversals in STEREO Wave Data, *J. Geophys. Res.*, *117*, A04,317, doi:10.1029/2011JA017425.

Breneman, A. W., C. A. Cattell, L. B. Wilson III, K. Kersten, K. Goetz, and A. Paradise (2012b), STEREO observations of waves near the ramp region of interplanetary shocks, *AGU Fall Meeting Abstracts*, pp. SH21B–2208, dec. 3-7, San Francisco, CA.

Briand, C. (2009), Review on electrostatic structures in the solar wind: observational considerations, *Nonlinear Proc. Geophys.*, *16*, 319–329.

Brice, N. (1963), An Explanation of Triggered Very-Low-Frequency Emissions, *J. Geophys. Res.*, *68*, 4626–+.

Brice, N. (1964a), Fundamentals of Very Low Frequency Emission Generation Mechanisms, *J. Geophys. Res.*, *69*, 4515–+, doi:10.1029/JZ069i021p04515.

Brice, N. (1964b), Maximum Duration of Discrete Very Low Frequency Emissions, *J. Geophys. Res.*, *69*, 4698–4700, doi:10.1029/JZ069i021p04698.

Brice, N. (1971), Harnessing the energy in the radiation belts., *J. Geophys. Res.*, *76*, 4698–4701, doi:10.1029/JA076i019p04698.

Brice, N. M. (1960), Traveling Wave Amplification of Whistlers, *J. Geophys. Res.*, *65*, 3840–+, doi:10.1029/JZ065i011p03840.

Brice, N. M., and R. L. Smith (1965), Lower Hybrid Resonance Emissions, *J. Geophys. Res.*, *70*, 71–80, doi:10.1029/JZ070i001p00071.

Brinca, A. L., and B. T. Tsurutani (1989), The oblique behavior of low-frequency electromagnetic waves excited by newborn cometary ions, *J. Geophys. Res.*, *94*, 3–14, doi:10.1029/JA094iA01p00003.

Brinca, A. L., Y. Omura, and H. Matsumoto (1998), Stability of perpendicular propagation in time-varying nongyrotropic plasmas: Simulations, *J. Geophys. Res.*, *103*, 29,493–29,504, doi:10.1029/98JA02541.

Brinca, A. L., F. J. Romeiras, and L. Gomberoff (2003a), On wave generation by perpendicular currents, *J. Geophys. Res.*, *108*, 1038–+, doi:10.1029/2002JA009375.

Brinca, A. L., F. J. Romeiras, and L. Gomberoff (2003b), Stimulation of electron Bernstein modes by perpendicular ion beams, *Geophys. Res. Lett.*, *30*, 220,000–1, doi:10.1029/2003GL017501.

Brinca, A. L., F. J. Romeiras, L. Gomberoff, and M. H. Marçal (2004), On the generation of totem pole emissions, *J. Geophys. Res.*, *109*, 6201–+, doi:10.1029/2004JA010388.

Brinkley, S. R., and J. G. Kirkwood (1947a), Theory of the Propagation of Shock Waves, *Phys. Rev.*, *71*, 606–611, doi:10.1103/PhysRev.71.606.

Brinkley, S. R., and J. G. Kirkwood (1947b), Theory of the Propagation of Shock Waves from Infinite Cylinders of Explosive, *Phys. Rev.*, *72*, 1109–1113, doi:10.1103/PhysRev.72.1109.

Büchner, J., and N. Elkina (2006), Anomalous resistivity of current-driven isothermal plasmas due to phase space structuring, *Physics of Plasmas*, *13*, 082,304–+, doi:10.1063/1.2209611.

Buneman, O. (1959), Dissipation of Currents in Ionized Media, *Phys. Rev.*, *115*, 503–517, doi:10.1103/PhysRev.115.503.

Burgess, D. (1989a), On the effect of a tangential discontinuity on ions specularly reflected at an oblique shock, *J. Geophys. Res.*, *94*, 472–478, doi:10.1029/JA094iA01p00472.

Burgess, D. (1989b), Cyclic behavior at quasi-parallel collisionless shocks, *Geophys. Res. Lett.*, *16*, 345–348, doi:10.1029/GL016i005p00345.

Burgess, D. (2007), Particle Acceleration at the Earth's Bow Shock, in *Lecture Notes in Physics, Berlin Springer Verlag, Lecture Notes in Physics, Berlin Springer Verlag*, vol. 725, edited by K.-L. Klein and A. L. MacKinnon, pp. 161–+.

Burgess, D., and M. Scholer (2007), Shock front instability associated with reflected ions at the perpendicular shock, *Phys. Plasmas*, *14*(1), 012,108–+, doi:10.1063/1.2435317.

Burgess, D., and S. J. Schwartz (1984), The dynamics and upstream distributions of ions reflected at the earth's bow shock, *J. Geophys. Res.*, *89*, 7407–7422, doi:10.1029/JA089iA09p07407.

Burgess, D., W. P. Wilkinson, and S. J. Schwartz (1989), Ion distributions and thermalization at perpendicular and quasi-perpendicular supercritical collisionless shocks, *J. Geophys. Res.*, *94*, 8783–8792, doi:10.1029/JA094iA07p08783.

Burtis, W. J., and R. A. Helliwell (1969), Banded chorus - A new type of VLF radiation observed in the magnetosphere by OGO 1 and OGO 3., *J. Geophys. Res.*, *74*, 3002–3010, doi:10.1029/JA074i011p03002.

Burton, R. K., and R. E. Holzer (1974), The Origin and Propagation of Chorus in the Outer Magnetosphere, *J. Geophys. Res.*, *79*, 1014–1023, doi:10.1029/JA079i007p01014.

Burton, W. B., J. M. E. Kuijpers, E. P. J. van den Heuvel, H. van der Laan, I. Appenzeller, J. N. Bahcall, F. Bertola, J. P. Cassinelli, C. J. Cesarsky, O. Engvold, R. McCray, P. G. Murdin, F. Pacini, V. Radhakrishnan, K. Sato, F. H. Shu, B. V. Somov, R. A. Sunyaev, Y. Tanaka, S. Tremaine, and N. O. Weiss (Eds.) (2002), *Collisionless Shock Waves*, chap. 10, pp. 243–259, Astrophysics and Space Science Library, Springer Netherlands, doi:10.1007/0-306-47719-X_10.

Cairns, I. H. (1987a), The electron distribution function upstream from the earth's bow shock, *J. Geophys. Res.*, *92*, 2315–2327, doi:10.1029/JA092iA03p02315.

Cairns, I. H. (1987b), A theory for the Langmuir waves in the electron foreshock, *J. Geophys. Res.*, *92*, 2329–2342, doi:10.1029/JA092iA03p02329.

Cairns, I. H. (1989), Electrostatic wave generation above and below the plasma frequency by electron beams, *Phys. Fluids B*, *1*, 204–213, doi:10.1063/1.859088.

Cairns, I. H. (1994), Fine structure in plasma waves and radiation near the plasma frequency in Earth's foreshock, *J. Geophys. Res.*, *99*, 23,505–+, doi:10.1029/94JA01997.

Cairns, I. H., and B. F. McMillan (2005), Electron acceleration by lower hybrid waves in magnetic reconnection regions, *Phys. Plasmas*, *12*, 102,110–+, doi:10.1063/1.2080567.

Cairns, I. H., and K. Nishikawa (1989), Simulations relevant to the beam instability in the foreshock, *J. Geophys. Res.*, *94*, 79–88, doi:10.1029/JA094iA01p00079.

Cairns, I. H., and P. A. Robinson (1992), Theory for low-frequency modulated Langmuir wave packets, *Geophys. Res. Lett.*, *19*, 2187–2190, doi:10.1029/92GL02632.

Califano, F., and A. Mangeney (2008), A one dimensional, electrostatic Vlasov model for the generation of suprathermal electron tails in solar wind conditions, *J. Geophys. Res.*, *113*, 6103–+, doi:10.1029/2007JA012841.

Camporeale, E., and D. Burgess (2008), Electron firehose instability: Kinetic linear theory and two-dimensional particle-in-cell simulations, *J. Geophys. Res.*, *113*, A07,107, doi:10.1029/2008JA013043.

Canu, P., P. M. E. Décréau, J. G. Trotignon, J. L. Rauch, H. C. Seran, P. Fergeau, M. Lévêque, P. Martin, F. X. Sené, E. Le Guirriec, H. Alleyne, and K. Yearby (2001), Identification of natural plasma emissions observed close to the plasmapause by the Cluster-Whisper relaxation sounder, *Ann. Geophys.*, *19*, 1697–1709.

Cao, J. B., H. S. Fu, T. L. Zhang, H. Reme, I. Dandouras, and E. Lucek (2009), Direct evidence of solar wind deceleration in the foreshock of the Earth, *J. Geophys. Res.*, *114*, 2207–+, doi:10.1029/2008JA013524.

Caponi, M. Z., and N. A. Krall (1975), Anomalous heat conduction along the field lines for turbulently heated plasmas, *Phys. Fluids*, *18*, 699–709, doi:10.1063/1.861194.

Cargill, P. J., and K. Papadopoulos (1988), A mechanism for strong shock electron heating in supernova remnants, *Astrophys. J.*, *329*, L29–L32, doi:10.1086/185170.

Carlson, C. W., D. W. Curtis, G. Paschmann, and W. Michael (1982), An instrument for rapidly measuring plasma distribution functions with high resolution, *Adv. Space Res.*, *2*, 67–70, doi:10.1016/0273-1177(82)90151-X.

Carlson, C. W., J. P. McFadden, R. E. Ergun, M. Temerin, W. Peria, F. S. Mozer, D. M. Klumpar, E. G. Shelley, W. K. Peterson, E. Moebius, R. Elphic, R. Strangeway, C. Cattell, and R. Pfaff (1998), FAST observations in the downward auroral current region: Energetic upgoing electron beams, parallel potential drops, and ion heating, *Geophys. Res. Lett.*, *25*, 2017–2020, doi:10.1029/98GL00851.

Carpenter, D. L. (1968), Ducted Whistler-Mode Propagation in the Magnetosphere: A Half-Gyrofrequency Upper Intensity Cutoff and Some Associated Wave Growth Phenomena, *J. Geophys. Res.*, *73*, 2919–+, doi:10.1029/JA073i009p02919.

Carter, T. A., H. Ji, F. Trintchouk, M. Yamada, and R. M. Kulsrud (2002a), Measurement of Lower-Hybrid Drift Turbulence in a Reconnecting Current Sheet, *Phys. Rev. Lett.*, *88*, 015,001–+, doi:10.1103/PhysRevLett.88.015001.

Carter, T. A., M. Yamada, H. Ji, R. M. Kulsrud, and F. Trintchouk (2002b), Experimental study of lower-hybrid drift turbulence in a reconnecting current sheet, *Phys. Plasmas*, *9*, 3272–3288, doi:10.1063/1.1494433.

Castaldo, C., E. Lazzaro, M. Lontano, and A. M. Sergeev (1997), Spectral broadening of lower hybrid waves due to ponderomotive effects, *Phys. Lett. A*, *230*, 336–346, doi:10.1016/S0375-9601(97)00268-5.

Cattell, C., and M. Hudson (1982), Flute mode waves near the lower hybrid frequency excited by ion rings in velocity space, *Geophys. Res. Lett.*, *9*, 1167–1170, doi:10.1029/GL009i010p01167.

Cattell, C., F. Mozer, K. Tsuruda, H. Hayakawa, M. Nakamura, T. Okada, S. Kokubun, and T. Yamamoto (1994), Geotail observations of spiky electric fields and low-frequency waves in the plasma sheet and plasma sheet boundary, *Geophys. Res. Lett.*, *21*, 2987–2990, doi:10.1029/94GL02193.

Cattell, C., J. Wygant, F. S. Mozer, T. Okada, K. Tsuruda, S. Kokubun, and T. Yamamoto (1995), ISEE 1 and Geotail observations of low-frequency waves at the magnetopause, *J. Geophys. Res.*, *100*, 11,823–+, doi:10.1029/94JA03146.

Cattell, C., T. Bennett, K. Sigsbee, T. Streed, F. S. Mozer, I. Roth, K. Tsuruda, T. Yamamoto, T. Okada, and S. Kokubun (1996), Effects of low-frequency waves and spiky electric fields in the magnetotail, in *International Conference on Substorms*, *ESA Special Publication*, vol. 389, edited by E. J. Rolfe & B. Kaldeich, pp. 521–+.

Cattell, C., J. Wygant, J. Dombeck, F. S. Mozer, M. Temerin, and C. T. Russell (1998a), Observations of large amplitude parallel electric field wave packets at the plasma sheet boundary, *Geophys. Res. Lett.*, *25*, 857–860, doi:10.1029/98GL00497.

Cattell, C., R. Bergmann, K. Sigsbee, C. Carlson, C. Chaston, R. Ergun, J. McFadden, F. S. Mozer, M. Temerin, R. Strangeway, R. Elphic, L. Kistler, E. Moebius, L. Tang, D. Klumpar, and R. Pfaff (1998b), The association of electrostatic ion cyclotron waves, ion and electron beams and field-aligned currents: FAST observations of an auroral zone crossing near midnight, *Geophys. Res. Lett.*, *25*, 2053–2056, doi:10.1029/98GL00834.

Cattell, C., J. Crumley, J. Dombeck, J. R. Wygant, and F. S. Mozer (2002a), Polar observations of solitary waves at the Earth's magnetopause, *Geophys. Res. Lett.*, *29*, 050,000–1, doi:10.1029/2001GL014046.

Cattell, C., L. Johnson, R. Bergmann, D. Klumpar, C. Carlson, J. McFadden, R. Strangeway, R. Ergun, K. Sigsbee, and R. Pfaff (2002b), FAST observations of discrete electrostatic waves in association with down-going ion beams in the auroral zone, *J. Geophys. Res.*, *107*, 1238–+, doi:10.1029/2001JA000254.

Cattell, C., C. Neiman, J. Dombeck, J. Crumley, J. Wygant, C. A. Kletzing, W. K. Peterson, F. S. Mozer, and M. André (2003), Large amplitude solitary waves in and near the Earth's magnetosphere, magnetopause and bow shock: Polar and Cluster observations, *Nonlinear Processes in Geophysics*, *10*, 13–26.

Cattell, C., J. Dombeck, W. Yusof, C. Carlson, and J. McFadden (2004), FAST observations of the solar illumination dependence of upflowing electron beams in the auroral zone, *J. Geophys. Res.*, *109*, 2209–+, doi:10.1029/2003JA010075.

Cattell, C., J. Dombeck, J. Wygant, J. F. Drake, M. Swisdak, M. L. Goldstein, W. Keith, A. Fazakerley, M. André, E. Lucek, and A. Balogh (2005), Cluster observations of electron holes in association with magnetotail reconnection and comparison to simulations, *J. Geophys. Res.*, *110*, 1211–+, doi:10.1029/2004JA010519.

Cattell, C., J. R. Wygant, K. Goetz, K. Kersten, P. J. Kellogg, T. von Rosenvinge, S. D. Bale, I. Roth, M. Temerin, M. K. Hudson, R. A. Mewaldt, M. Wiedenbeck, M. Maksimovic, R. Ergun, M. Acuna, and C. T. Russell (2008), Discovery of very large amplitude whistler-mode waves in Earth's radiation belts, *Geophys. Res. Lett.*, *35*, 1105–+, doi:10.1029/2007GL032009.

Cattell, C., A. Breneman, K. Goetz, P. Kellogg, K. Kersten, L. Wilson III, J. Wygant, S. Bale, I. Roth, and M. Maksimovic (2009), Observations of intense whistler-mode waves and simulations of associated acceleration of electrons, *APS Meeting Abstracts*, pp. 6001–+.

Cattell, C., J. Dombeck, A. Preiwisch, S. Thaller, P. Vo, L. B. Wilson III, J. Wygant, S. B. Mende, H. U. Frey, R. Ilie, and G. Lu (2011a), Observations of a high-latitude stable electron auroral emission at ∼16 MLT during a large substorm, *J. Geophys. Res.*, *116*, A07,215, doi:10.1029/2010JA016132.

Cattell, C. A., and F. S. Mozer (1982), Electric fields measured by ISEE-1 within and near the neutral sheet during quiet and active times, *Geophys. Res. Lett.*, *9*, 1041–1044, doi:10.1029/GL009i009p01041.

Cattell, C. A., and F. S. Mozer (1986), Experimental determination of the dominant wave mode in the active near-earth magnetotail, *Geophys. Res. Lett.*, *13*, 221–224, doi:10.1029/GL013i003p00221.

Cattell, C. A., M. Kim, R. P. Lin, and F. S. Mozer (1982), Observations of large electric fields near the plasmasheet boundary by ISEE-1, *Geophys. Res. Lett.*, *9*, 539–542, doi:10.1029/GL009i005p00539.

Cattell, C. A., F. S. Mozer, E. W. Hones, Jr., R. R. Anderson, and R. D. Sharp (1986a), ISEE observations of the plasma sheet boundary, plasma sheet, and neutral sheet. I - Electric field, magnetic field, plasma, and ion composition, *J. Geophys. Res.*, *91*, 5663–5688, doi:10.1029/JA091iA05p05663.

Cattell, C. A., F. S. Mozer, R. R. Anderson, E. W. Hones, and R. D. Sharp (1986b), ISEE observations of the plasma sheet boundary, plasma sheet, and neutral sheet: 2. Waves, *J. Geophys. Res.*, *91*, 5681–5688, doi:10.1029/JA091iA05p05681.

Cattell, C. A., A. W. Breneman, K. Kersten, P. J. Kellogg, K. Goetz, J. R. Wygant, L. B. Wilson III, M. Looper, J. B. Blake, and I. Roth (2011b), Large Amplitude Whistler Waves and Electron Energization in Earth's Radiation Belts, chapman Conference: Dynamics of the Earth's Radiation Belts and Inner Magnetosphere, July 17-22, 2011.

Cattell, C. A., A. W. Breneman, K. Goetz, P. J. Kellogg, K. Kersten, J. R. Wygant, L. B. Wilson III, M. D. Looper, J. B. Blake, and I. Roth (2012), Large Amplitude Whistler Waves and Electron Acceleration in the Earth's Radiation Belts: A Review of STEREO and Wind Observations, in *Dynamics of the Earth's Radiation Belts and Inner Magnetosphere*, edited by D. Summers, I. R. Mann, D. N. Baker, and M. Schulz, Geophys. Monogr. Ser., AGU, Washington, D.C., accepted.

Chang, C. L., H. K. Wong, and C. S. Wu (1990), Electromagnetic instabilities attributed to a cross-field ion drift, *Phys. Rev. Lett.*, *65*, 1104–1107, doi:10.1103/PhysRevLett.65.1104.

Chang, T. (1993), Lower-hybrid collapse, caviton turbulence, and charged particle energization in the topside auroral ionosphere and magnetosphere, *Phys. Fluids B*, *5*, 2646–2656, doi:10.1063/1.860702.

Chapman, S. C., R. E. Lee, and R. O. Dendy (2005), Perpendicular Shock Reformation and Ion Acceleration, *Space Sci. Rev.*, *121*, 5–19, doi:10.1007/s11214-006-4481-x.

Che, H., J. F. Drake, M. Swisdak, and P. H. Yoon (2009), Nonlinear Development of Streaming Instabilities in Strongly Magnetized Plasma, *Phys. Rev. Lett.*, *102*, 145,004–+, doi:10.1103/PhysRevLett.102.145004.

Chisham, G., S. J. Schwartz, and D. Burgess (1996), The anisotropy variations of electron distributions in the terrestrial ion foreshock, *J. Geophys. Res.*, *101*, 445–456, doi:10.1029/95JA03128.

Chodura, R., G. Bardotti, and F. Engelmann (1971), Numerical investigation of the anomalous resistivity due to two-stream instability, *Plasma Phys.*, *13*, 1099–1110, doi:10.1088/0032-1028/13/12/002.

Chollet, E. E., and J. Giacalone (2008), Multispacecraft Analysis of Energetic Ion Flux Dropouts, *Astrophys. J.*, *688*, 1368–1373, doi:10.1086/592378.

Chotoo, K., N. A. Schwadron, G. M. Mason, T. H. Zurbuchen, G. Gloeckler, A. Posner, L. A. Fisk, A. B. Galvin, D. C. Hamilton, and M. R. Collier (2000), The suprathermal seed population for corotating interaction region ions at 1 AU deduced from composition and spectra of H^{+}, He^{++}, and He^{+} observed on Wind, *J. Geophys. Res.*, *105*, 23,107–23,122, doi:10.1029/1998JA000015.

Chum, J., and O. Santolík (2005), Propagation of whistler-mode chorus to low altitudes: divergent ray trajectories and ground accessibility, *Ann. Geophys.*, *23*, 3727–3738.

Chum, J., O. Santolík, A. W. Breneman, C. A. Kletzing, D. A. Gurnett, and J. S. Pickett (2007), Chorus source properties that produce time shifts and frequency range differences observed on different Cluster spacecraft, *J. Geophys. Res.*, *112*, 6206–+, doi:10.1029/2006JA012061.

Cohen, R. S., L. Spitzer, and P. M. Routly (1950), The Electrical Conductivity of an Ionized Gas, *Phys. Rev.*, *80*, 230–238, doi:10.1103/PhysRev.80.230.

Colgate, S. A. (1959), Collisionless Plasma Shock, *Phys. Fluids*, *2*, 485–493, doi:10.1063/1.1705938.

Collinson, G. A., L. B. Wilson III, D. G. Sibeck, N. Shane, T. L. Zhang, T. E. Moore, A. J. Coates, and S. Barabash (2012a), Short Large-Amplitude Magnetic Structures (SLAMS) at Venus, *J. Geophys. Res.*, *117*, 10,221–+, doi:10.1029/2012JA017838.

Collinson, G. A., A. Masters, N. Shane, L. B. Wilson III, J. A. Slavin, T. L. Zhang, T. E. Moore, M. Sarantos1, S. A. Boardsen, and S. Barabash (2012b), New discoveries in the Venusian Foreshock, *AGU Fall Meeting Abstracts*, pp. SM21A–2231, dec. 3-7, San Francisco, CA.

Comişel, H., M. Scholer, J. Soucek, and S. Matsukiyo (2011), Non-stationarity of the quasi-perpendicular bow shock: comparison between Cluster observations and simulations, *Ann. Geophys.*, *29*, 263–274, doi:10.5194/angeo-29-263-2011.

Comisar, G. G. (1962), Structure of Strong Plasma Shock Waves in a Transverse Magnetic Field, *Phys. Fluids*, *5*, 1590–1596, doi:10.1063/1.1706570.

Coppi, B., M. N. Rosenbluth, and R. Z. Sagdeev (1967), Instabilities due to Temperature Gradients in Complex Magnetic Field Configurations, *Phys. Fluids*, *10*, 582–587, doi:10.1063/1.1762151.

Coppi, B., G. Lampis, and F. Pegorado (1976), Anomalous transport model in high density regimes of confined plasmas, *Phys. Lett. A*, *59*, 118–120, doi:10.1016/0375-9601(76)90761-1.

Coroniti, F. V. (1970a), Turbulence structure of high-beta perpendicular fast shocks., *J. Geophys. Res.*, *75*, 7007–7017, doi:10.1029/JA075i034p07007.

Coroniti, F. V. (1970b), Dissipation discontinuities in hydromagnetic shock waves, *J. Plasma Phys.*, *4*, 265–+, doi:10.1017/S0022377800004992.

Coroniti, F. V. (1985), Space plasma turbulent dissipation - Reality or myth?, *Space Sci. Rev.*, *42*, 399–410, doi:10.1007/BF00214995.

Coroniti, F. V., and A. Eviatar (1977), Magnetic field reconnection in a collisionless plasma, *Astrophys. J. Suppl.*, *33*, 189–210, doi:10.1086/190423.

Coroniti, F. V., C. F. Kennel, F. L. Scarf, and E. J. Smith (1982), Whistler mode turbulence in the disturbed solar wind, *J. Geophys. Res.*, *87*, 6029–6044, doi:10.1029/JA087iA08p06029.

Cranmer, S. R. (2001), Ion cyclotron diffusion of velocity distributions in the extended solar corona, *J. Geophys. Res.*, *106*, 24,937–24,954, doi:10.1029/2001JA000012.

Cranmer, S. R., J. L. Kohl, G. Noci, E. Antonucci, G. Tondello, M. C. E. Huber, L. Strachan, A. V. Panasyuk, L. D. Gardner, M. Romoli, S. Fineschi, D. Dobrzycka, J. C. Raymond, P. Nicolosi, O. H. W. Siegmund, D. Spadaro, C. Benna, A. Ciaravella, S. Giordano, S. R. Habbal, M. Karovska, X. Li, R. Martin, J. G. Michels, A. Modigliani, G. Naletto, R. H. O'Neal, C. Pernechele, G. Poletto, P. L. Smith, and R. M. Suleiman (1999a), An Empirical Model of a Polar Coronal Hole at Solar Minimum, *Astrophys. J.*, *511*, 481–501, doi:10.1086/306675.

Cranmer, S. R., G. B. Field, and J. L. Kohl (1999b), Spectroscopic Constraints on Models of Ion-cyclotron Resonance Heating in the Polar Solar Corona, *Space Sci. Rev.*, *87*, 149–152, doi:10.1023/A:1005142922406.

Cranmer, S. R., G. B. Field, and J. L. Kohl (1999c), Spectroscopic Constraints on Models of Ion Cyclotron Resonance Heating in the Polar Solar Corona and High-Speed Solar Wind, *Astrophys. J.*, *518*, 937–947, doi:10.1086/307330.

Cranmer, S. R., G. B. Field, and J. L. Kohl (1999d), The impact of ion-cyclotron wave dissipation on heating and accelerating the fast solar wind, in *American Institute of Physics Conference Series, American Institute of Physics Conference Series*, vol. 471, edited by S. R. Habbal, R. Esser, J. V. Hollweg, & P. A. Isenberg, pp. 35–38, doi:10.1063/1.58772.

Cranmer, S. R., W. H. Matthaeus, B. A. Breech, and J. C. Kasper (2009), Empirical Constraints on Proton and Electron Heating in the Fast Solar Wind, *Astrophys. J.*, *702*, 1604–1614, doi:10.1088/0004-637X/702/2/1604.

Crawford, F. W., and J. A. Tataronis (1965), Absolute Instabilities of Perpendicularly Propagating Cyclotron Harmonic Plasma Waves, *J. Appl. Phys.*, *36*, 2930–2934, doi:10.1063/1.1714609.

Crooker, N. U., and C. Pagel (2008), Residual strahls in solar wind electron dropouts: Signatures of magnetic connection to the Sun, disconnection, or interchange reconnection?, *J. Geophys. Res.*, *113*, 2106–+, doi:10.1029/2007JA012421.

Crooker, N. U., D. E. Larson, S. W. Kahler, S. M. Lamassa, and H. E. Spence (2003), Suprathermal electron isotropy in high-beta solar wind and its role in heat flux dropouts, *Geophys. Res. Lett.*, *30*(12), 120,000–1, doi:10.1029/2003GL017036.

Crumley, J. P., C. A. Cattell, R. L. Lysak, and J. P. Dombeck (2001), Studies of ion solitary waves using simulations including hydrogen and oxygen beams, *J. Geophys. Res.*, *106*, 6007–6016, doi:10.1029/2000JA003038.

Cully, C. M., J. W. Bonnell, and R. E. Ergun (2008), THEMIS observations of long-lived regions of large-amplitude whistler waves in the inner magnetosphere, *Geophys. Res. Lett.*, *35*, 17–+, doi:10.1029/2008GL033643.

Cully, C. M., V. Angelopoulos, U. Auster, J. W. Bonnell, and O. Le Contel (2011), Observational evidence of the generation mechanism for rising-tone chorus, *Geophys. Res. Lett.*, *38*, L01,106–+, doi:10.1029/2010GL045793.

Curtis, D. W., C. W. Carlson, R. P. Lin, G. Paschmann, and H. Reme (1989), On-board data analysis techniques for space plasma particle instruments, *Rev. Sci. Instr.*, *60*, 372–380, doi:10.1063/1.1140441.

Daughton, W. (2003), Electromagnetic properties of the lower-hybrid drift instability in a thin current sheet, *Phys. Plasmas*, *10*, 3103–3119, doi:10.1063/1.1594724.

Daughton, W., and S. P. Gary (1998), Electromagnetic proton/proton instabilities in the solar wind, *J. Geophys. Res.*, *103*, 20,613–20,620, doi:10.1029/98JA01385.

Davidson, R. C. (1978), Quasi-linear stabilization of lower-hybrid-drift instability, *Phys. Fluids*, *21*, 1375–1380, doi:10.1063/1.862379.

Davidson, R. C., and N. T. Gladd (1975), Anomalous transport properties associated with the lower-hybrid-drift instability, *Phys. Fluids*, *18*, 1327–1335, doi:10.1063/1.861021.

Davidson, R. C., N. T. Gladd, C. S. Wu, and J. D. Huba (1976), Influence of finite-beta effects on the lower-hybrid-drift instability in post-implosion theta pinches, *Phys. Rev. Lett.*, *37*, 750–753, doi:10.1103/PhysRevLett.37.750.

Davidson, R. C., N. T. Gladd, C. S. Wu, and J. D. Huba (1977), Effects of finite plasma beta on the lower-hybrid-drift instability, *Phys. Fluids*, *20*, 301–310, doi:10.1063/1.861867.

Davis, V. A., M. J. Mandell, and M. F. Thomsen (2008), Representation of the measured geosynchronous plasma environment in spacecraft charging calculations, *J. Geophys. Res.*, *113*, 10,204, doi:10.1029/2008JA013116.

Davis, W. D. (1977), Measurement of plasma wave electric fields in solar flares, *Solar Phys.*, *54*, 139–149, doi:10.1007/BF00146430.

de Hoffmann, F., and E. Teller (1950), Magneto-Hydrodynamic Shocks, *Phys. Rev.*, *80*, 692–703, doi:10.1103/PhysRev.80.692.

de Koning, C. A., J. T. Gosling, R. M. Skoug, and J. T. Steinberg (2006), Widths of suprathermal pitch angle distributions during solar electron bursts: ACE observations, *J. Geophys. Res.*, *111*, 4101–+, doi:10.1029/2005JA011326.

de Koning, C. A., J. T. Gosling, R. M. Skoug, and J. T. Steinberg (2007), Energy dependence of electron pitch angle distribution widths in solar bursts, *J. Geophys. Res.*, *112*, 4101–+, doi:10.1029/2006JA011971.

de Wit, T. D., V. V. Krasnosel'skikh, M. Dunlop, and H. Lühr (1999), Identifying nonlinear wave interactions in plasmas using two-point measurements: A case study of Short Large Amplitude Magnetic Structures (SLAMS), *J. Geophys. Res.*, *104*, 17,079–17,090, doi:10.1029/1999JA900134.

Decker, J., and A. K. Ram (2006), Relativistic description of electron Bernstein waves, *Phys. Plasmas*, *13*(11), 112,503–+, doi:10.1063/1.2366585.

Decker, R. B. (1983), Formation of shock-spike events at quasi-perpendicular shocks, *J. Geophys. Res.*, *88*, 9959–9973, doi:10.1029/JA088iA12p09959.

Decker, R. B. (1988a), The role of drifts in diffusive shock acceleration, *Astrophys. J.*, *324*, 566–573, doi:10.1086/165917.

Decker, R. B. (1988b), Computer modeling of test particle acceleration at oblique shocks, *Space Sci. Rev.*, *48*, 195–262, doi:10.1007/BF00226009.

Décréau, P. M. E., J. Etcheto, K. Knott, A. Pedersen, G. L. Wrenn, and D. T. Young (1978), Multi-experiment determination of plasma density and temperature, *Space Sci. Rev.*, *22*, 633–645, doi:10.1007/BF00223945.

Delva, M., T. L. Zhang, M. Volwerk, Z. Vörös, and S. A. Pope (2008), Proton cyclotron waves in the solar wind at Venus, *J. Geophys. Res.*, *113*, E00B06, doi:10.1029/2008JE003148.

Denton, R. E., M. R. Lessard, J. W. LaBelle, and S. P. Gary (1998), Identification of low-frequency magnetosheath waves, *J. Geophys. Res.*, *103*, 23,661–23,676, doi:10.1029/98JA02196.

Desai, M. I., and D. Burgess (2008), Particle acceleration at coronal mass ejection-driven interplanetary shocks and the Earth's bow shock, *J. Geophys. Res.*, *113*, A00B06.

Desch, M. (2005), Wind: Understanding Interplanetary Dynamics, nASA Goddard Space Flight Center, Online: *http://istp.gsfc.nasa.gov/wind.shtml*.

Deserio, R. (1989), Spherical sector electrostatic analyzers for measurements of energy and angular distributions, *Rev. Sci. Inst.*, *60*, 381–388, doi:10.1063/1.1140386.

Devine, P. E., S. C. Chapman, and J. W. Eastwood (1995), One- and two-dimensional simulations of whistler mode waves in an anisotropic plasma, *J. Geophys. Res.*, *100*, 17,189–17,204, doi:10.1029/95JA00842.

Dieckmann, M. E., and P. K. Shukla (2006), Electron surfing acceleration by the electron two-stream instability in a weak magnetic field, *Plasma Phys. & Controlled Fusion*, *48*, 1515–1530, doi:10.1088/0741-3335/48/10/005.

Dieckmann, M. E., B. Eliasson, P. K. Shukla, N. J. Sircombe, and R. O. Dendy (2006), Two-stream instability in collisionless shocks and foreshock, *Plasma Phys. & Controlled Fusion*, *48*, B303–B311, doi:10.1088/0741-3335/48/12B/S29.

Dieckmann, M. E., A. Bret, and P. K. Shukla (2008), Electron surfing acceleration by mildly relativistic beams: wave magnetic field effects, *New J. Phys.*, *10*(1), 013,029–+, doi:10.1088/1367-2630/10/1/013029.

Dieckmann, M. E., G. C. Murphy, A. Meli, and L. O. C. Drury (2010), Particle-in-cell simulation of a mildly relativistic collision of an electron-ion plasma carrying a quasi-parallel magnetic field . Electron acceleration and magnetic field amplification at supernova shocks, *Astron. & Astrophys.*, *509*, A89+, doi:10.1051/0004-6361/200912643.

Dimmock, A. P., M. A. Balikhin, and Y. Hobara (2011), Comparison of three methods for the estimation of cross-shock electric potential using Cluster data, *Ann. Geophys.*, *29*, 815–822, doi:10.5194/angeo-29-815-2011.

Dixon, V. A., and L. C. Woods (1976), On the structure of oblique hydromagnetic shock waves, *Plasma Phys.*, *18*, 627–640, doi:10.1088/0032-1028/18/8/005.

Donnelle, D., and B. Rust (2005), The fast Fourier transform for experimentalists. Part I. Concepts, *Computing in Science Engineering*, *7*, 80–88, doi:10.1109/MCSE.2005.42.

Donnelly, D. (2006), The fast fourier transform for experimentalists, part V: filters, *Computing in Science Engineering*, *8*, 92–95, doi:10.1109/MCSE.2006.14.

Donnelly, D., and B. Rust (2005), The fast Fourier transform for experimentalists. Part II. convolutions, *Computing in Science Engineering*, *7*, 92–95, doi:10.1109/MCSE.2005.82.

Dosch, A., and A. Shalchi (2010), Diffusive shock acceleration at interplanetary perpendicular shock waves: Influence of the large scale structure of turbulence on the maximum particle energy, *Adv. Space Res.*, *46*, 1208–1217, doi:10.1016/j.asr.2010.07.001.

Dowden, R. L. (1971), Location of Generation Regions (in L and λ) of Midlatitude VLF Discrete Emissions by Dispersion Analysis of Ground Station Observations, *J. Geophys. Res.*, *76*, 1729–1737, doi:10.1029/JA076i007p01729.

Draganov, A. B., U. S. Inan, V. S. Sonwalkar, and T. F. Bell (1993), Whistlers and plasmaspheric hiss - Wave directions and three-dimensional propagation, *J. Geophys. Res.*, *98*, 11,401–+, doi:10.1029/93JA00662.

Drake, J. F., M. Swisdak, C. Cattell, M. A. Shay, B. N. Rogers, and A. Zeiler (2003), Formation of Electron Holes and Particle Energization During Magnetic Reconnection, *Science*, *299*, 873–877, doi:10.1126/science.1080333.

Drake, J. F., M. A. Shay, and M. Swisdak (2009a), The Hall fields and fast magnetic reconnection, *Phys. Plasmas*, *15*, 042,306, doi:10.1063/1.2901194.

Drake, J. F., M. Swisdak, T. D. Phan, P. A. Cassak, M. A. Shay, S. T. Lepri, R. P. Lin, E. Quataert, and T. H. Zurbuchen (2009b), Ion heating resulting from pickup in magnetic reconnection exhausts, *J. Geophys. Res.*, *114*, A05,111, doi:10.1029/2008JA013701.

Dreicer, H. (1959), Electron and Ion Runaway in a Fully Ionized Gas. I, *Phys. Rev.*, *115*, 238–249, doi:10.1103/PhysRev.115.238.

Dubouloz, N., and M. Scholer (1993), On the origin of short large-amplitude magnetic structures upstream of quasi-parallel collisionless shocks, *Geophys. Res. Lett.*, *20*, 547–550, doi:10.1029/93GL00803.

Dubouloz, N., and M. Scholer (1995a), 2D hybrid simulations of short large-amplitude magnetic structures (SLAMS) upstream of quasi-parallel collisionless shocks, *Adv. Space Res.*, *15*, 175–178, doi:10.1016/0273-1177(94)00100-F.

Dubouloz, N., and M. Scholer (1995b), Two-dimensional simulations of magnetic pulsations upstream of the Earth's bow shock, *J. Geophys. Res.*, *100*, 9461–9474, doi:10.1029/94JA03239.

Dum, C. T. (1971), Anomalous resistivity of a turbulent plasma, *Plasma Physics*, *13*, 399–413, doi:10.1088/0032-1028/13/5/007.

Dum, C. T. (1975), Strong-turbulence theory and the transition from Landau to collisional damping, *Phys. Rev. Lett.*, *35*, 947–950, doi:10.1103/PhysRevLett.35.947.

Dum, C. T. (1978a), Anomalous heating by ion sound turbulence, *Phys. Fluids*, *21*, 945–955, doi:10.1063/1.862338.

Dum, C. T. (1978b), Anomalous electron transport equations for ion sound and related turbulent spectra, *Phys. Fluids*, *21*, 956–969, doi:10.1063/1.862339.

Dum, C. T. (1985), Coupling of macroscopic and small scale phenomena, *Space Sci. Rev.*, *42*, 467–484, doi:10.1007/BF00214999.

Dum, C. T. (1989), Transition in the dispersive properties of beam-plasma and two-stream instabilities, *J. Geophys. Res.*, *94*, 2429–2442, doi:10.1029/JA094iA03p02429.

Dum, C. T. (1990a), Simulation studies of plasma waves in the electron foreshock - The generation of Langmuir waves by a gentle bump-on-tail electron distribution, *J. Geophys. Res.*, *95*, 8095–8110, doi:10.1029/JA095iA06p08095.

Dum, C. T. (1990b), Simulation studies of plasma waves in the electron foreshock - The transition from reactive to kinetic instability, *J. Geophys. Res.*, *95*, 8111–8122, doi:10.1029/JA095iA06p08111.

Dum, C. T. (1990c), Simulation studies of plasma waves in the electron foreshock - The generation of downshifted oscillations, *J. Geophys. Res.*, *95*, 8123–8131, doi:10.1029/JA095iA06p08123.

Dum, C. T., and T. H. Dupree (1970), Nonlinear Stabilization of High-Frequency Instabilities in a Magnetic Field, *Phys. Fluids*, *13*, 2064–2081, doi:10.1063/1.1693204.

Dum, C. T., and K. Nishikawa (1994), Two-dimensional simulation studies of the electron beam-plasma instability, *Phys. Plasmas*, *1*, 1821–1826, doi:10.1063/1.870636.

Dum, C. T., and R. N. Sudan (1971), Nonlinear Beam-Plasma Interactions and Stochastic Acceleration, *Phys. Fluids*, *14*, 414–423, doi:10.1063/1.1693442.

Dum, C. T., R. Chodura, and D. Biskamp (1974), Turbulent Heating and Quenching of the Ion Sound Instability, *Phys. Rev. Lett.*, *32*, 1231–1234, doi:10.1103/PhysRevLett.32.1231.

Dum, C. T., E. Marsch, and W. Pilipp (1980), Determination of wave growth from measured distribution functions and transport theory, *J. Plasma Phys.*, *23*, 91–113.

Dupree, T. H. (1966), A Perturbation Theory for Strong Plasma Turbulence, *Phys. Fluids*, *9*, 1773–1782, doi:10.1063/1.1761932.

Dusenbery, P. B., and J. V. Hollweg (1981), Ion-cyclotron heating and acceleration of solar wind minor ions, *J. Geophys. Res.*, *86*, 153–164, doi:10.1029/JA086iA01p00153.

Dyrud, L. P., and M. M. Oppenheim (2006), Electron holes, ion waves, and anomalous resistivity in space plasmas, *J. Geophys. Res.*, *111*, 1302–+, doi:10.1029/2004JA010482.

Eastwood, J. P., A. Balogh, M. W. Dunlop, T. S. Horbury, and I. Dandouras (2002), Cluster observations of fast magnetosonic waves in the terrestrial foreshock, *Geophys. Res. Lett.*, *29*(22), 220,000–1, doi:10.1029/2002GL015582.

Eastwood, J. P., A. Balogh, C. Mazelle, I. Dandouras, and H. Rème (2004), Oblique propagation of 30 s period fast magnetosonic foreshock waves: A Cluster case study, *Geophys. Res. Lett.*, *31*, 4804–+, doi:10.1029/2003GL018897.

Eastwood, J. P., A. Balogh, E. A. Lucek, C. Mazelle, and I. Dandouras (2005a), Quasi-monochromatic ULF foreshock waves as observed by the four-spacecraft Cluster mission: 1. Statistical properties, *J. Geophys. Res.*, *110*, 11,219–+, doi:10.1029/2004JA010617.

Eastwood, J. P., A. Balogh, E. A. Lucek, C. Mazelle, and I. Dandouras (2005b), Quasi-monochromatic ULF foreshock waves as observed by the four-spacecraft Cluster mission: 2. Oblique propagation, *J. Geophys. Res.*, *110*, 11,220–+, doi:10.1029/2004JA010618.

Eastwood, J. P., E. A. Lucek, C. Mazelle, K. Meziane, Y. Narita, J. Pickett, and R. A. Treumann (2005c), The Foreshock, *Space Sci. Rev.*, *118*, 41–94, doi:10.1007/s11214-005-3824-3.

Edmiston, J. P., and C. F. Kennel (1984), A parametric survey of the first critical Mach number for a fast MHD shock., *J. Plasma Phys.*, *32*, 429–441.

Edmiston, J. P., and C. F. Kennel (1986), A parametric study of slow shock Rankine-Hugoniot solutions and critical Mach numbers, *J. Geophys. Res.*, *91*, 1361–1372, doi:10.1029/JA091iA02p01361.

Edmiston, J. P., C. F. Kennel, and D. Eichler (1982), Escape of heated ions upstream of quasi-parallel shocks, *Geophys. Res. Lett.*, *9*, 531–534, doi:10.1029/GL009i005p00531.

Elaoufir, J., A. Mangeney, T. Passot, C. C. Harvey, and C. T. Russell (1990), Large amplitude MHD waves in the earth's proton foreshock, *Ann. Geophys.*, *8*, 297–314.

Ellis, R. A., and M. Porkolab (1968), Nonlinear Interactions of Cyclotron Harmonic Plasma Waves, *Phys. Rev. Lett.*, *21*, 529–533, doi:10.1103/PhysRevLett.21.529.

Ellison, D. C., and G. P. Double (2004), Diffusive shock acceleration in unmodified relativistic, oblique shocks, *Astroparticle Phys.*, *22*, 323–338, doi:10.1016/j.astropartphys.2004.08.005.

Ellison, D. C., and S. P. Reynolds (1991), Electron acceleration in a nonlinear shock model with applications to supernova remnants, *Astrophys. J.*, *382*, 242–254, doi:10.1086/170712.

Ellison, D. C., M. G. Baring, and F. C. Jones (1996), Nonlinear Particle Acceleration in Oblique Shocks, *Astrophys. J.*, *473*, 1029–+, doi:10.1086/178213.

Ellison, D. C., P. Blasi, and S. Gabici (2005), Thermal Particle Injection in Nonlinear Diffusive Shock Acceleration, in *International Cosmic Ray Conference*, *International Cosmic Ray Conference*, vol. 3, pp. 261–+.

Erdos, G., and A. Balogh (1990), The acceleration of low energy protons by quasi-perpendicular interplanetary shocks, *Planet. Space Sci.*, *38*, 343–353, doi:10.1016/0032-0633(90)90100-5.

Ergun, R. E. (1999), Magnetic-field-aligned electric fields associated with Debye-scale plasma structures , *Plasma Physics and Controlled Fusion*, *41*, A61–A73.

Ergun, R. E., C. W. Carlson, J. P. McFadden, D. M. Tonthat, and J. H. Clemmons (1991), Observation of electron bunching during Landau growth and damping, *J. Geophys. Res.*, *96*, 11,371–+, doi:10.1029/91JA00658.

Ergun, R. E., G. T. Delory, E. Klementis, C. W. Carlson, J. P. McFadden, I. Roth, and M. Temerin (1993), VLF wave growth from dispersive bursts of field-aligned electron fluxes, *J. Geophys. Res.*, *98*, 3777–3787, doi:10.1029/92JA02193.

Ergun, R. E., C. W. Carlson, J. P. McFadden, F. S. Mozer, G. T. Delory, W. Peria, C. C. Chaston, M. Temerin, R. Elphic, R. Strangeway, R. Pfaff, C. A. Cattell, D. Klumpar, E. Shelly, W. Peterson, E. Moebius, and L. Kistler (1998a), FAST satellite wave observations in the AKR source region, *Geophys. Res. Lett.*, *25*, 2061–2064, doi:10.1029/98GL00570.

Ergun, R. E., C. W. Carlson, J. P. McFadden, F. S. Mozer, G. T. Delory, W. Peria, C. C. Chaston, M. Temerin, R. Elphic, R. Strangeway, R. Pfaff, C. A. Cattell, D. Klumpar, E. Shelley, W. Peterson, E. Moebius, and L. Kistler (1998b), FAST satellite observations of electric field structures in the auroral zone, *Geophys. Res. Lett.*, *25*, 2025–2028, doi:10.1029/98GL00635.

Ergun, R. E., C. W. Carlson, J. P. McFadden, F. S. Mozer, G. T. Delory, W. Peria, C. C. Chaston, M. Temerin, I. Roth, L. Muschietti, R. Elphic, R. Strangeway, R. Pfaff, C. A. Cattell, D. Klumpar, E. Shelley, W. Peterson, E. Moebius, and L. Kistler (1998c), FAST satellite observations of large-amplitude solitary structures, *Geophys. Res. Lett.*, *25*, 2041–2044, doi:10.1029/98GL00636.

Ergun, R. E., C. W. Carlson, J. P. McFadden, F. S. Mozer, L. Muschietti, I. Roth, and R. J. Strangeway (1998d), Debye-Scale Plasma Structures Associated with Magnetic-Field-Aligned Electric Fields, *Phys. Rev. Lett.*, *81*, 826–829, doi:10.1103/PhysRevLett.81.826.

Ergun, R. E., D. Larson, R. P. Lin, J. P. McFadden, C. W. Carlson, K. A. Anderson, L. Muschietti, M. McCarthy, G. K. Parks, H. Reme, J. M. Bosqued, C. D'Uston, T. R. Sanderson, K. P. Wenzel, M. Kaiser, R. P. Lepping, S. D. Bale, P. Kellogg, and J.-L. Bougeret (1998e), Wind Spacecraft Observations of Solar Impulsive Electron Events Associated with Solar Type III Radio Bursts, *Astrophys. J.*, *503*, 435–+, doi:10.1086/305954.

Ergun, R. E., C. W. Carlson, J. P. McFadden, F. S. Mozer, and R. J. Strangeway (2000), Parallel electric fields in discrete arcs, *Geophys. Res. Lett.*, *27*, 4053–4056, doi:10.1029/2000GL003819.

Ergun, R. E., D. M. Malaspina, I. H. Cairns, M. V. Goldman, D. L. Newman, P. A. Robinson, S. Eriksson, J. L. Bougeret, C. Briand, S. D. Bale, C. A. Cattell, P. J. Kellogg, and M. L. Kaiser (2008), Eigenmode Structure in Solar-Wind Langmuir Waves, *Phys. Rev. Lett.*, *101*, 051,101–+, doi:10.1103/PhysRevLett.101.051101.

Ergun, R. E., D. M. Malaspina, S. D. Bale, J. P. McFadden, D. E. Larson, F. S. Mozer, N. Meyer-Vernet, M. Maksimovic, P. J. Kellogg, and J. R. Wygant (2010), Spacecraft charging and ion wake formation in the near-Sun environment, *Physics of Plasmas*, *17*(7), 072,903, doi:10.1063/1.3457484.

Eselevich, M. V. (2010), On Formation Of A Shock Wave In Front Of A Coronal Mass Ejection With Velocity Exceeding The Critical One, *Twelfth International Solar Wind Conference*, *1216*, 444–447, doi:10.1063/1.3395899.

Eselevich, M. V., and V. G. Eselevich (2010), On The Possible Mechanism Of Energy Dissipation In Shock-Wave Fronts Driven Ahead Of Coronal Mass Ejections, *Twelfth International Solar Wind Conference*, *1216*, 448–452, doi:10.1063/1.3395900.

Eselevich, V. G. (1982), Shock-wave structure in collisionless plasmas from results of laboratory experiments, *Space Sci. Rev.*, *32*, 65–81, doi:10.1007/BF00225177.

Eselevich, V. G. (1984), On the nature of 'overshoot' in a collisionless shock, *Planet. Space Sci.*, *32*, 439–445, doi:10.1016/0032-0633(84)90123-5.

Eselevich, V. G. (1994), Quantitative characteristics of solar active processes and their relationship with the transit velocity of interplanetary shock waves, *Planet. Space Sci.*, *42*, 575–582, doi:10.1016/0032-0633(94)90079-5.

Eselevich, V. G., and M. A. Filippov (1986), Study of the mechanism for solar wind formation, *Planet. Space Sci.*, *34*, 1119–1132, doi:10.1016/0032-0633(86)90024-3.

Eselevich, V. G., R. K. Kurtmullaev, and V. I. Pil'Skii (1967), Influence of Dispersion Effects on the Structure of a Shock Wave in a Magnetized Plasma, *Sov. Phys.–JETP*, *5*, 255–+.

Eselevich, V. G., A. G. Es'kov, R. K. Kurtmullaev, and A. I. Malyutin (1971), Isomagnetic Discondinuity in a Collisionless Shock Wave in a Plasma, *Sov. Phys.–JETP*, *13*, 49–+.

Evans, D. J. (1989), On the entropy of nonequilibrium states, *J. Statistical Phys.*, *57*, 745–758, doi:10.1007/BF01022830.

Evans, D. J., and G. Morriss (1990), *Statistical Mechanics of Nonequilibrium Liquids, 1st edition*, Academic Press, London 1990.

Evans, D. J., and G. Morriss (2008), *Statistical Mechanics of Nonequilibrium Liquids, 2nd edition*, Cambridge: Cambridge University Press, 2008.

Evans, D. J., and D. J. Searles (1994), Equilibrium microstates which generate second law violating steady states, *Phys. Rev. E*, *50*, 1645–1648, doi:10.1103/PhysRevE.50.1645.

Evans, D. J., E. G. D. Cohen, and G. P. Morriss (1990), Viscosity of a simple fluid from its maximal Lyapunov exponents, *Phys. Rev. A*, *42*, 5990–5997, doi:10.1103/PhysRevA.42.5990.

Eyni, M., and A. S. Kaufman (1977), Simplified calculation of the relaxation of the temperature anisotropy in a plasma due to binary encounters, *J. Phys. A Math. Gen.*, *10*, L83–L86, doi:10.1088/0305-4470/10/4/008.

Fairfield, D. H. (1969), Bow shock associated waves observed in the far upstream interplanetary medium., *J. Geophys. Res.*, *74*, 3541–3553, doi:10.1029/JA074i014p03541.

Fairfield, D. H. (1974), Whistler Waves Observed Upstream from Collisionless Shocks, *J. Geophys. Res.*, *79*, 1368–1378, doi:10.1029/JA079i010p01368.

Fairfield, D. H., and W. C. Feldman (1975), Standing waves at low Mach number laminar bow shocks, *J. Geophys. Res.*, *80*, 515–522, doi:10.1029/JA080i004p00515.

Farge, M. (1992), Wavelet transforms and their applications to turbulence, *Ann. Rev. Fluid Mechan.*, *24*, 395–457, doi:10.1146/annurev.fl.24.010192.002143.

Farrell, W. M., D. A. Gurnett, J. D. Menietti, H. K. Wong, and C. S. Lin (1990), Wave intensifications near the electron cyclotron frequency within the polar cusp, *J. Geophys. Res.*, *95*, 6493–6504, doi:10.1029/JA095iA05p06493.

Farrell, W. M., M. D. Desch, M. L. Kaiser, and K. Goetz (2002), The dominance of electron plasma waves near a reconnection X-line region, *Geophys. Res. Lett.*, *29*(19), 190,000–1, doi:10.1029/2002GL014662.

Farrell, W. M., M. D. Desch, K. W. Ogilvie, M. L. Kaiser, and K. Goetz (2003), The role of upper hybrid waves in magnetic reconnection, *Geophys. Res. Lett.*, *30*(24), 2259, doi:10.1029/2003GL017549.

Farris, M. H., C. T. Russell, M. F. Thomsen, and J. T. Gosling (1992), ISEE 1 and 2 observations of the high beta shock, *J. Geophys. Res.*, *97*, 19,121–+, doi:10.1029/92JA01976.

Farris, M. H., C. T. Russell, and M. F. Thomsen (1993), Magnetic structure of the low beta, quasi-perpendicular shock, *J. Geophys. Res.*, *98*, 15,285–+, doi:10.1029/93JA00958.

Feldman, W. C., J. R. Asbridge, S. J. Bame, and M. D. Montgomery (1973a), Double ion streams in the solar wind., *J. Geophys. Res.*, *78*, 2017–2027, doi:10.1029/JA078i013p02017.

Feldman, W. C., J. R. Asbridge, S. J. Bame, and M. D. Montgomery (1973b), Solar wind heat transport in the vicinity of the earth's bow shock., *J. Geophys. Res.*, *78*, 3697–3713, doi:10.1029/JA078i019p03697.

Feldman, W. C., J. R. Asbridge, S. J. Bame, and M. D. Montgomery (1973c), On the origin of solar wind proton thermal anisotropy., *J. Geophys. Res.*, *78*, 6451–6468, doi:10.1029/JA078i028p06451.

Feldman, W. C., J. R. Asbridge, S. J. Bame, M. D. Montgomery, and S. P. Gary (1975), Solar wind electrons, *J. Geophys. Res.*, *80*, 4181–4196, doi:10.1029/JA080i031p04181.

Feldman, W. C., J. R. Asbridge, S. J. Bame, J. T. Gosling, and D. S. Lemons (1978), Characteristic electron variations across simple high-speed solar wind streams, *J. Geophys. Res.*, *83*, 5285–5295, doi:10.1029/JA083iA11p05285.

Feldman, W. C., S. J. Bame, S. P. Gary, J. T. Gosling, D. McComas, M. F. Thomsen, G. Paschmann, N. Sckopke, M. M. Hoppe, and C. T. Russell (1982), Electron heating within the earth's bow shock, *Phys. Rev. Lett.*, *49*, 199–201, doi:10.1103/PhysRevLett.49.199.

Feldman, W. C., R. C. Anderson, S. J. Bame, S. P. Gary, J. T. Gosling, D. J. McComas, M. F. Thomsen, G. Paschmann, and M. M. Hoppe (1983a), Electron velocity distributions near the earth's bow shock, *J. Geophys. Res.*, *88*, 96–110, doi:10.1029/JA088iA01p00096.

Feldman, W. C., R. C. Anderson, S. J. Bame, J. T. Gosling, R. D. Zwickl, and E. J. Smith (1983b), Electron velocity distributions near interplanetary shocks, *J. Geophys. Res.*, *88*, 9949–9958, doi:10.1029/JA088iA12p09949.

Feng, W., D. A. Gurnett, and I. H. Cairns (1992), Interference patterns in the Spacelab 2 plasma wave data - Oblique electrostatic waves generated by the electron beam, *J. Geophys. Res.*, *97*, 17,005–+, doi:10.1029/92JA00989.

Field, G. B. (1956), Radiation by Plasma Oscillations., *Astrophys. J.*, *124*, 555–+, doi:10.1086/146261.

Filbert, P. C., and P. J. Kellogg (1979), Electrostatic noise at the plasma frequency beyond the earth's bow shock, *J. Geophys. Res.*, *84*, 1369–1381, doi:10.1029/JA084iA04p01369.

Fiser, J., J. Chum, G. Diendorfer, M. Parrot, and O. Santolík (2010), Whistler intensities above thunderstorms, *Ann. Geophys.*, *28*, 37–46.

Fishman, F. J., A. R. Kantrowitz, and H. E. Petschek (1960), Magnetohydrodynamic Shock Wave in a Collision-Free Plasma, *Rev. Modern Phys.*, *32*, 959–966, doi:10.1103/RevModPhys.32.959.

Fisk, L. A., and G. Gloeckler (2006), The Common Spectrum for Accelerated Ions in the Quiet-Time Solar Wind, *Astrophys. J.*, *640*, L79–L82, doi:10.1086/503293.

Fitzenreiter, R. J., A. J. Klimas, and J. D. Scudder (1984), Detection of bump-on-tail reduced electron velocity distributions at the electron foreshock boundary, *Geophys. Res. Lett.*, *11*, 496–499, doi:10.1029/GL011i005p00496.

Fitzenreiter, R. J., J. D. Scudder, and A. J. Klimas (1990), Three-dimensional analytical model for the spatial variation of the foreshock electron distribution function - Systematics and comparisons with ISEE observations, *J. Geophys. Res.*, *95*, 4155–4173, doi:10.1029/JA095iA04p04155.

Fitzenreiter, R. J., A. F. Viñas, A. J. Klimas, R. P. Lepping, M. L. Kaiser, and T. G. Onsager (1996), Wind observations of the electron foreshock, *Geophys. Res. Lett.*, *23*, 1235–1238, doi:10.1029/96GL00826.

Fitzenreiter, R. J., K. W. Ogilvie, D. J. Chornay, and J. Keller (1998), Observations of electron velocity distribution functions in the solar wind by the WIND spacecraft: High angular resolution strahl measurements, *Geophys. Res. Lett.*, *25*, 249–252, doi:10.1029/97GL03703.

Fitzenreiter, R. J., K. W. Ogilvie, S. D. Bale, and A. F. Viñas (2003), Modification of the solar wind electron velocity distribution at interplanetary shocks, *J. Geophys. Res.*, *108*, 1415–+, doi:10.1029/2003JA009865.

Fletcher, L., and H. S. Hudson (2008), Impulsive Phase Flare Energy Transport by Large-Scale Alfvén Waves and the Electron Acceleration Problem, *Astrophys. J.*, *675*, 1645–1655, doi:10.1086/527044.

Formisano, V. (1982), Measurement of the potential drop across the earth's collisionless bow shock, *Geophys. Res. Lett.*, *9*, 1033–1036, doi:10.1029/GL009i009p01033.

Formisano, V., and R. Torbert (1982), Ion acoustic wave forms generated by ion-ion streams at the earth's bow shock, *Geophys. Res. Lett.*, *9*, 207–210, doi:10.1029/GL009i003p00207.

Formisano, V., S. Orsini, C. Bonifazi, A. Egidi, and G. Moreno (1980), High time resolution observations of the solar wind and backstreaming ions in the earth's foreshock region, *Geophys. Res. Lett.*, *7*, 385–388, doi:10.1029/GL007i005p00385.

Formisano, V., A. Pedersen, and P.-A. Lindqvist (1982), The fine structure of the front side magnetopause during two successive crossings, *J. Geophys. Res.*, *87*, 2115–2123, doi:10.1029/JA087iA04p02115.

Forslund, D., R. Morse, C. Nielson, and J. Fu (1972), Electron Cyclotron Drift Instability and Turbulence, *Phys. Fluids*, *15*, 1303–1318, doi:10.1063/1.1694082.

Forslund, D. W. (1970), Instabilities associated with heat conduction in the solar wind and their consequences., *J. Geophys. Res.*, *75*, 17–28, doi:10.1029/JA075i001p00017.

Forslund, D. W., and J. P. Freidberg (1971), Theory of Laminar Collisionless Shocks, *Phys. Rev. Lett.*, *27*, 1189–1192, doi:10.1103/PhysRevLett.27.1189.

Forslund, D. W., and C. R. Shonk (1970), Formation and Structure of Electrostatic Collisionless Shocks, *Phys. Rev. Lett.*, *25*, 1699–1702, doi:10.1103/PhysRevLett.25.1699.

Forslund, D. W., R. L. Morse, and C. W. Nielson (1970), Electron Cyclotron Drift Instability, *Phys. Rev. Lett.*, *25*, 1266–1270, doi:10.1103/PhysRevLett.25.1266.

Forslund, D. W., R. L. Morse, and C. W. Nielson (1971), Nonlinear Electron-Cyclotron Drift Instability and Turbulence, *Phys. Rev. Lett.*, *27*, 1424–1428, doi:10.1103/PhysRevLett.27.1424.

Forslund, D. W., K. B. Quest, J. U. Brackbill, and K. Lee (1984), Collisionless dissipation in quasi-perpendicular shocks, *J. Geophys. Res.*, *89*, 2142–2150, doi:10.1029/JA089iA04p02142.

Fowler, R. A., B. J. Kotick, and R. D. Elliott (1967), Polarization Analysis of Natural and Artificially Induced Geomagnetic Micropulsations, *J. Geophys. Res.*, *72*, 2871–+, doi:10.1029/JZ072i011p02871.

Franz, J. R., P. M. Kintner, and J. S. Pickett (1998), POLAR observations of coherent electric field structures, *Geophys. Res. Lett.*, *25*, 1277–1280, doi:10.1029/98GL50870.

Franz, J. R., P. M. Kintner, C. E. Seyler, J. S. Pickett, and J. D. Scudder (2000), On the perpendicular scale of electron phase-space holes, *Geophys. Res. Lett.*, *27*, 169–+, doi:10.1029/1999GL010733.

Franz, J. R., P. M. Kintner, J. S. Pickett, and L.-J. Chen (2005), Properties of small-amplitude electron phase-space holes observed by Polar, *J. Geophys. Res.*, *110*, 9212–+, doi:10.1029/2005JA011095.

Fränz, M., and D. Harper (2002), Heliospheric coordinate systems, *Planet. Space Sci.*, *50*, 217–233.

Fraser, G. W. (2002), The ion detection efficiency of microchannel plates (MCPs), *Int. J. of Mass Spectrometry*, *215*, 13–30, doi:10.1016/S1387-3806(01)00553-X.

Fredricks, R. W. (1968), Structure of generalized ion Bernstein modes from the full electromagnetic dispersion relation, *J. Plasma Phys.*, *2*, 365–+, doi:10.1017/S0022377800003895.

Fredricks, R. W., and F. L. Scarf (1965), Effects of Solar-Wind Composition on the Threshold for Plasma Instability in the Transition Region, *J. Geophys. Res.*, *70*, 4765–4776, doi:10.1029/JZ070i019p04765.

Fredricks, R. W., F. L. Scarf, and W. Bernstein (1965), Numerical Estimates of Superthermal Electron Production by Ion Acoustic Waves in the Transition Region, *J. Geophys. Res.*, *70*, 21–28, doi:10.1029/JZ070i001p00021.

Fredricks, R. W., F. V. Coroniti, C. F. Kennel, and F. L. Scarf (1970a), Fast Time-Resolved Spectra of Electrostatic Turbulence in the Earth's Bow Shock, *Phys. Rev. Lett.*, *24*, 994–998, doi:10.1103/PhysRevLett.24.994.

Fredricks, R. W., G. M. Crook, C. F. Kennel, I. M. Green, F. L. Scarf, P. J. Coleman, and C. T. Russell (1970b), OGO 5 observations of electrostatic turbulence in bow shock magnetic structures., *J. Geophys. Res.*, *75*, 3751–3768, doi:10.1029/JA075i019p03751.

French, A. P. (1971), *Vibrations and Waves*, W. W. Norton & Company, New York, NY.

French, A. P. (1972), Vibrations and Waves, *Amer. J. Phys.*, *40*, 214–215, doi:10.1119/1.1986492.

Freund, H. P., D. Dillenburg, and C. S. Wu (1982), Wave excitation by inhomogeneous suprathermal electron beams, *J. Plasma Phys.*, *27*, 69–81, doi:10.1017/S0022377800026386.

Friedel, R. H. W., G. D. Reeves, and T. Obara (2002), Relativistic electron dynamics in the inner magnetosphere - a review, *J. Atmos. Solar-Terr. Phys.*, *64*, 265–282, doi:10.1016/S1364-6826(01)00088-8.

Fujimoto, K., and S. Machida (2003), An electron heating mechanism in the outflow region from the X-type neutral line, *J. Geophys. Res.*, *108*, 1349–+, doi:10.1029/2002JA009810.

Funsten, H. O., D. M. Suszcynsky, R. W. Harper, J. E. Nordholt, and B. L. Barraclough (1996), Effect of local electric fields on microchannel plate detection of incident 20 keV protons, *Rev. Sci. Inst.*, *67*, 145–154, doi:10.1063/1.1146562.

Furuya, N., Y. Omura, and D. Summers (2008), Relativistic turning acceleration of radiation belt electrons by whistler mode chorus, *J. Geophys. Res.*, *113*, 4224–+, doi:10.1029/2007JA012478.

Fuselier, S. A. (1995), Ion distributions in the Earth's foreshock upstream from the bow shock, *Adv. Space Res.*, *15*, 43–52, doi:10.1016/0273-1177(94)00083-D.

Fuselier, S. A., and D. A. Gurnett (1984), Short wavelength ion waves upstream of the earth's bow shock, *J. Geophys. Res.*, *89*, 91–103, doi:10.1029/JA089iA01p00091.

Fuselier, S. A., M. F. Thomsen, J. T. Gosling, S. J. Bame, and C. T. Russell (1986a), Gyrating and intermediate ion distributions upstream from the earth's bow shock, *J. Geophys. Res.*, *91*, 91–99, doi:10.1029/JA091iA01p00091.

Fuselier, S. A., M. F. Thomsen, S. P. Gary, S. J. Bame, and C. T. Russell (1986b), The phase relationship between gyrophase-bunched ions and MHD-like waves, *Geophys. Res. Lett.*, *13*, 60–63, doi:10.1029/GL013i001p00060.

Fuselier, S. A., J. T. Gosling, and M. F. Thomsen (1986c), The motion of ions specularly reflected off a quasi-parallel shock in the presence of large-amplitude, monochromatic MHD waves, *J. Geophys. Res.*, *91*, 4163–4170, doi:10.1029/JA091iA04p04163.

Galeev, A. A. (1984), The heating and acceleration of electrons by shocks, *Adv. Space Res.*, *4*, 255–263, doi:10.1016/0273-1177(84)90319-3.

Galeev, A. A. (1986), Electron and ion heating at supercritical shocks, *Adv. Space Res.*, *6*, 17–24, doi:10.1016/0273-1177(86)90004-9.

Galeev, A. A., S. S. Moiseev, and R. Z. Sagdeev (1964), The theory of the stability of non-uniform plasma and anomalous diffusion, *J. Nucl. Energy*, *6*, 645–669, doi:10.1088/0368-3281/6/6/309.

Galeev, A. A., R. Z. Sagdeev, V. D. Shapiro, and V. I. Shevchenko (1976), Effect of acoustic turbulence on the collapse of Langmuir waves, *ZhETF Pis ma Redaktsiiu*, *24*, 25–29.

Galeev, A. A., R. Z. Sagdeev, V. D. Shapiro, V. I. Shevchenko, and K. Szego (1989), MHD turbulence and particle acceleration in a mass-loaded solar wind, *Adv. Space Res.*, *9*, 331–336, doi:10.1016/0273-1177(89)90284-6.

Galeev, A. A., M. A. Malkov, and H. J. Völk (1995), Macroscopic electric fields driven by lower-hybrid turbulence and acceleration of thermal electrons in the foot of quasi-perpendicular shocks, *J. Plasma Phys.*, *54*, 59–+, doi:10.1017/S0022377800018341.

Gallagher, D. L., P. D. Craven, and R. H. Comfort (1988), An empirical model of the earth's plasmasphere, *Adv. Space Res.*, *8*, 15–21, doi:10.1016/0273-1177(88)90258-X.

Galtier, S. (2009), Wave turbulence in magnetized plasmas, *Nonlinear Proc. Geophys.*, *16*, 83–98.

Ganguli, G., L. Rudakov, W. Scales, J. Wang, and M. Mithaiwala (2010), Three dimensional character of whistler turbulence, *Phys. Plasmas*, *17*, 052,310–+, doi:10.1063/1.3420245.

Gao, R. S., P. S. Gibner, J. H. Newman, K. A. Smith, and R. F. Stebbings (1984), Absolute and angular efficiencies of a microchannel-plate position-sensitive detector, *Rev. Sci. Inst.*, *55*, 1756–1759, doi:10.1063/1.1137671.

Garanin, S. F., A. I. Golubev, and N. A. Ismailova (2000), 2D Simulation of Perpendicular Collisionless Shock Wave, *Physica Scripta Volume T*, *84*, 200–202, doi:10.1238/Physica.Topical.084a00200.

Gargaté, L., and A. Spitkovsky (2012), Ion Acceleration in Non-relativistic Astrophysical Shocks, *Astrophys. J.*, *744*, 67, doi:10.1088/0004-637X/744/1/67.

Gary, S. P. (1970a), Nonlinear Ion-Acoustic Waves in a Vlasov Plasma, *Phys. Fluids*, *13*, 694–700, doi:10.1063/1.1692976.

Gary, S. P. (1970b), Electron heating by ion wave turbulence, *Phys. Lett. A*, *33*, 301–302, doi:10.1016/0375-9601(70)90150-7.

Gary, S. P. (1970c), Longitudinal waves in a perpendicular collisionless plasma shock. II. Vlasov ions, *J. Plasma Phys.*, *4*, 753–+.

Gary, S. P. (1978), Ion-acoustic-like instabilities in the solar wind, *J. Geophys. Res.*, *83*, 2504–2510, doi:10.1029/JA083iA06p02504.

Gary, S. P. (1980), Wave-particle transport from electrostatic instabilities, *Phys. Fluids*, *23*, 1193–1204, doi:10.1063/1.863120.

Gary, S. P. (1981), Microinstabilities upstream of the earth's bow shock - A brief review, *J. Geophys. Res.*, *86*, 4331–4336, doi:10.1029/JA086iA06p04331.

Gary, S. P. (1985a), Electromagnetic ion beam instabilities - Hot beams at interplanetary shocks, *Astrophys. J.*, *288*, 342–352, doi:10.1086/162797.

Gary, S. P. (1985b), Electromagnetic electron beam instabilities - Hot, isotropic beams, *J. Geophys. Res.*, *90*, 10,815–+, doi:10.1029/JA090iA11p10815.

Gary, S. P. (1987), The electron/electron acoustic instability, *Phys. Fluids*, *30*, 2745–2749, doi:10.1063/1.866040.

Gary, S. P. (1991), Electromagnetic ion/ion instabilities and their consequences in space plasmas - A review, *Space Sci. Rev.*, *56*, 373–415, doi:10.1007/BF00196632.

Gary, S. P. (1993), *Theory of Space Plasma Microinstabilities*, Cambridge Atmospheric and Space Science Series, Cambridge University Press.

Gary, S. P., and M. Ashour-Abdalla (1981), The lower hybrid density drift instability with cold plasma, *J. Geophys. Res.*, *86*, 1613–1616, doi:10.1029/JA086iA03p01613.

Gary, S. P., and T. E. Eastman (1979), The lower hybrid drift instability at the magnetopause, *J. Geophys. Res.*, *84*, 7378–7381, doi:10.1029/JA084iA12p07378.

Gary, S. P., and R. A. Gerwin (1979), Electrostatic ion cyclotron electron drift instability, *Phys. Fluids*, *22*, 1764–1769, doi:10.1063/1.862813.

Gary, S. P., and H. Karimabadi (2006), Linear theory of electron temperature anisotropy instabilities: Whistler, mirror, and Weibel, *J. Geophys. Res.*, *111*, 11,224–+, doi:10.1029/2006JA011764.

Gary, S. P., and H. Li (2000), Whistler Heat Flux Instability at High Beta, *Astrophys. J.*, *529*, 1131–1135, doi:10.1086/308294.

Gary, S. P., and C. D. Madland (1985), Electromagnetic electron temperature anisotropy instabilities, *J. Geophys. Res.*, *90*, 7607–7610, doi:10.1029/JA090iA08p07607.

Gary, S. P., and M. M. Mellott (1985), Whistler damping at oblique propagation - Laminar shock precursors, *J. Geophys. Res.*, *90*, 99–104, doi:10.1029/JA090iA01p00099.

Gary, S. P., and K. Nishimura (2003), Resonant electron firehose instability: Particle-in-cell simulations, *Phys. Plasmas*, *10*, 3571–3576, doi:10.1063/1.1590982.

Gary, S. P., and N. Omidi (1987), The ion-ion acoustic instability, *J. Plasma Phys.*, *37*, 45–61.

Gary, S. P., and J. J. Sanderson (1970), Longitudinal waves in a perpendicular collisionless plasma shock. I. Cold ions, *J. Plasma Phys.*, *4*, 739–+.

Gary, S. P., and J. J. Sanderson (1979), Electrostatic temperature gradient drift instabilities, *Phys. Fluids*, *22*, 1500–1509, doi:10.1063/1.862769.

Gary, S. P., and J. J. Sanderson (1981), Energy transport by weak electrostatic drift fluctuations, *Phys. Fluids*, *24*, 638–650, doi:10.1063/1.863417.

Gary, S. P., and S. J. Schwartz (1981), Wave-particle transport by weak electrostatic flow shear fluctuations, *J. Geophys. Res.*, *86*, 11,139–11,147, doi:10.1029/JA086iA13p11139.

Gary, S. P., and M. F. Thomsen (1982), An electrostatic parabolic density drift instability, *J. Geophys. Res.*, *87*, 73–76, doi:10.1029/JA087iA01p00073.

Gary, S. P., and R. L. Tokar (1985), The second-order theory of electromagnetic hot ion beam instabilities, *J. Geophys. Res.*, *90*, 65–72, doi:10.1029/JA090iA01p00065.

Gary, S. P., and J. Wang (1996), Whistler instability: Electron anisotropy upper bound, *J. Geophys. Res.*, *101*, 10,749–10,754, doi:10.1029/96JA00323.

Gary, S. P., W. C. Feldman, D. W. Forslund, and M. D. Montgomery (1975), Heat flux instabilities in the solar wind, *J. Geophys. Res.*, *80*, 4197–4203, doi:10.1029/JA080i031p04197.

Gary, S. P., M. D. Montgomery, W. C. Feldman, and D. W. Forslund (1976a), Proton temperature anisotropy instabilities in the solar wind, *J. Geophys. Res.*, *81*, 1241–1246, doi:10.1029/JA081i007p01241.

Gary, S. P., R. A. Gerwin, and D. W. Forslund (1976b), Electromagnetic current instabilities, *Phys. Fluids*, *19*, 579–586, doi:10.1063/1.861492.

Gary, S. P., J. T. Gosling, and D. W. Forslund (1981), The electromagnetic ion beam instability upstream of the earth's bow shock, *J. Geophys. Res.*, *86*, 6691–6696, doi:10.1029/JA086iA08p06691.

Gary, S. P., C. D. Madland, and B. T. Tsurutani (1985), Electromagnetic ion beam instabilities. II, *Phys. Fluids*, *28*, 3691–3695, doi:10.1063/1.865101.

Gary, S. P., M. F. Thomsen, and S. A. Fuselier (1986a), Electromagnetic instabilities and gyrophase-bunched particles, *Phys. Fluids*, *29*, 531–535, doi:10.1063/1.865441.

Gary, S. P., C. D. Madland, D. Schriver, and D. Winske (1986b), Computer simulations of electromagnetic cool ion beam instabilities, *J. Geophys. Res.*, *91*, 4188–4200, doi:10.1029/JA091iA04p04188.

Gary, S. P., R. L. Tokar, and D. Winske (1987), Ion/ion and electron/ion cross-field instabilities near the lower hybrid frequency, *J. Geophys. Res.*, *92*, 10,029–+, doi:10.1029/JA092iA09p10029.

Gary, S. P., S. A. Fuselier, and B. J. Anderson (1993a), Ion anisotropy instabilities in the magnetosheath, *J. Geophys. Res.*, *98*, 1481–1488, doi:10.1029/92JA01844.

Gary, S. P., M. E. McKean, and D. Winske (1993b), Ion cyclotron anisotropy instabilities in the magnetosheath - Theory and simulations, *J. Geophys. Res.*, *98*, 3963–3971, doi:10.1029/92JA02585.

Gary, S. P., B. J. Anderson, R. E. Denton, S. A. Fuselier, M. E. McKean, and D. Winske (1993c), Ion anisotropies in the magnetosheath, *Geophys. Res. Lett.*, *20*, 1767–1770, doi:10.1029/93GL01700.

Gary, S. P., E. E. Scime, J. L. Phillips, and W. C. Feldman (1994), The whistler heat flux instability: Threshold conditions in the solar wind, *J. Geophys. Res.*, *99*, 23,391–+, doi:10.1029/94JA02067.

Gary, S. P., J. A. Newbury, and B. E. Goldstein (1998a), Lower bound for electron core beta in the solar wind, *J. Geophys. Res.*, *103*, 14,559–14,566, doi:10.1029/98JA01172.

Gary, S. P., H. Li, S. O'Rourke, and D. Winske (1998b), Proton resonant firehose instability: Temperature anisotropy and fluctuating field constraints, *J. Geophys. Res.*, *103*, 14,567–14,574, doi:10.1029/98JA01174.

Gary, S. P., R. M. Skoug, and W. Daughton (1999), Electron heat flux constraints in the solar wind., *Phys. Plasmas*, *6*, 2607–2612, doi:10.1063/1.873532.

Gary, S. P., D. Winske, and M. Hesse (2000a), Electron temperature anisotropy instabilities: Computer simulations, *J. Geophys. Res.*, *105*, 10,751–10,760, doi:10.1029/1999JA000322.

Gary, S. P., Y. Kazimura, H. Li, and J.-I. Sakai (2000b), Simulations of electron/electron instabilities: Electromagnetic fluctuations, *Phys. Plasmas*, *7*, 448–456, doi:10.1063/1.873829.

Gary, S. P., L. Yin, D. Winske, and L. Ofman (2001a), Electromagnetic heavy ion cyclotron instability: Anisotropy constraint in the solar corona, *J. Geophys. Res.*, *106*, 10,715–10,722, doi:10.1029/2000JA000406.

Gary, S. P., R. M. Skoug, J. T. Steinberg, and C. W. Smith (2001b), Proton temperature anisotropy constraint in the solar wind: ACE observations, *Geophys. Res. Lett.*, *28*, 2759–2762, doi:10.1029/2001GL013165.

Gary, S. P., B. E. Goldstein, and J. T. Steinberg (2001c), Helium ion acceleration and heating by Alfvén/cyclotron fluctuations in the solar wind, *J. Geophys. Res.*, *106*, 24,955–24,964, doi:10.1029/2001JA000059.

Gary, S. P., S. Saito, and H. Li (2008), Cascade of whistler turbulence: Particle-in-cell simulations, *Geophys. Res. Lett.*, *35*, 2104–+, doi:10.1029/2007GL032327.

Geach, J., S. J. Schwartz, V. Génot, O. Moullard, A. Lahiff, and A. N. Fazakerley (2005), A corrector for spacecraft calculated electron moments, *Ann. Geophys.*, *23*, 931–943, doi:10.5194/angeo-23-931-2005.

Gedalin, M. (1996a), Ion reflection at the shock front revisited, *J. Geophys. Res.*, *101*, 4871–4878, doi:10.1029/95JA03669.

Gedalin, M. (1996b), Transmitted ions and ion heating in nearly perpendicular low-Mach number shocks, *J. Geophys. Res.*, *101*, 15,569–15,578, doi:10.1029/96JA00924.

Gedalin, M. (1997a), Ion Dynamics and Distribution At the Quasiperpendicular Collisionless Shock Front, *Surveys in Geophysics*, *18*, 541–566, doi:10.1023/A:1006509702173.

Gedalin, M. (1997b), Ion heating in oblique low-Mach number shocks, *Geophys. Res. Lett.*, *24*, 2511–2514, doi:10.1029/97GL02524.

Gedalin, M. (1999), Two-stream instability of electrons in the shock front, *Geophys. Res. Lett.*, *26*, 1239–1242, doi:10.1029/1999GL900239.

Gedalin, M., and M. Balikhin (2004), Electric potential in the low-Mach-number quasi-perpendicular collisionless shock ramp revisited, *J. Geophys. Res.*, *109*, 3106–+, doi:10.1029/2003JA010219.

Gedalin, M., and E. Griv (1999a), Role of overshoots in the formation of the downstream distribution of adiabatic electrons, *J. Geophys. Res.*, *104*, 14,821–14,826, doi:10.1029/1999JA900087.

Gedalin, M., and E. Griv (1999b), Collisionless electrons in a thin high Mach number shock: dependence on angle and β, *Ann. Geophys.*, *17*, 1251–1259, doi:10.1007/s00585-999-1251-6.

Gedalin, M., and D. Zilbersher (1995), Non-diagonal ion pressure in nearly-perpendicular collisionless shocks, *Geophys. Res. Lett.*, *22*, 3279–3282, doi:10.1029/95GL03284.

Gedalin, M., K. Gedalin, M. Balikhin, and V. Krasnosselskikh (1995a), Demagnetization of electrons in the electromagnetic field structure, typical for quasi-perpendicular collisionless shock front, *J. Geophys. Res.*, *100*, 9481–9488, doi:10.1029/94JA03369.

Gedalin, M., K. Gedalin, M. Balikhin, V. Krasnosselskikh, and L. J. C. Woolliscroft (1995b), Demagnetization of electrons in inhomogeneous $\mathrm{E}_{\perp}\mathrm{B}$: Implications for electron heating in shocks, *J. Geophys. Res.*, *100*, 19,911–19,918, doi:10.1029/95JA01399.

Gedalin, M., M. Balikhin, and V. Krasnosselskikh (1995c), Electron heating in quasiperpendicular shocks, *Adv. Space Res.*, *15*, 225–233, doi:10.1016/0273-1177(94)00102-7.

Gedalin, M., K. Gedalin, M. Balikhin, V. Krasnosselskikh, and L. J. C. Woolliscroft (1996), Reply, *J. Geophys. Res.*, *101*, 2567–2570, doi:10.1029/95JA03188.

Gedalin, M., M. Liverts, and M. A. Balikhin (2008), Distribution of escaping ions produced by non-specular reflection at the stationary quasi-perpendicular shock front, *J. Geophys. Res.*, *113*, 5101–+, doi:10.1029/2007JA012894.

Gendrin, R. (1974), Phase-bunching and other non-linear processes occurring in gyroresonant wave-particle interactions, *Astrophys. and Space Sci.*, *28*, 245–266, doi:10.1007/BF00642254.

Génot, V., and S. Schwartz (2004), Spacecraft potential effects on electron moments derived from a perfect plasma detector, *Ann. Geophys.*, *22*, 2073–2080, doi:10.5194/angeo-22-2073-2004.

Ghavamian, P., J. M. Laming, and C. E. Rakowski (2007), A Physical Relationship between Electron-Proton Temperature Equilibration and Mach Number in Fast Collisionless Shocks, *Astrophys. J.*, *654*, L69–L72, doi:10.1086/510740.

Giacalone, J. (2003), The physics of particle acceleration by collisionless shocks, *Planet. Space Sci.*, *51*, 659–664.

Giacalone, J. (2005), The Efficient Acceleration of Thermal Protons by Perpendicular Shocks, *Astrophys. J.*, *628*, L37–L40, doi:10.1086/432510.

Giacalone, J., and D. C. Ellison (2000), Three-dimensional numerical simulations of particle injection and acceleration at quasi-perpendicular shocks, *J. Geophys. Res.*, *105*, 12,541–12,556, doi:10.1029/1999JA000018.

Giacalone, J., and J. R. Jokipii (2006), Shock Acceleration of High-Energy Cosmic Rays: The Importance of the Magnetic-Field Angle, *Journal of Physics Conference Series*, *47*, 160–167, doi:10.1088/1742-6596/47/1/020.

Giacalone, J., and J. R. Jokipii (2007), Magnetic Field Amplification by Shocks in Turbulent Fluids, *Astrophys. J.*, *663*, L41–L44, doi:10.1086/519994.

Giacalone, J., and M. Neugebauer (2008), The Energy Spectrum of Energetic Particles Downstream of Turbulent Collisionless Shocks, *Astrophys. J.*, *673*, 629–636, doi:10.1086/524008.

Giacalone, J., T. P. Armstrong, and R. B. Decker (1991), Effect of magnetic overshoot on shock drift acceleration, *J. Geophys. Res.*, *96*, 3621–3626, doi:10.1029/90JA01627.

Giacalone, J., S. J. Schwartz, and D. Burgess (1993), Observations of suprathermal ions in association with SLAMS, *Geophys. Res. Lett.*, *20*, 149–152, doi:10.1029/93GL00067.

Gibbs, J. W. (1879), On the Fundamental Formulae of Dynamics, *Amer. J. Math.*, *2*, 49–64.

Gibbs, J. W. (1883), On an Alleged Exception to the Second Law of Thermodynamics, *Science*, *1*, 160–+, doi:10.1126/science.ns-1.6.160.

Gibbs, J. W. (1891), On the Rôle of Quaternions in the Algebra of Vectors, *Nature*, *43*, 511–513, doi:10.1038/043511c0.

Gibbs, J. W. (1896), Velocity of Propagation of Electrostatic Force, *Nature*, *53*, 509–+, doi:10.1038/053509a0.

Ginzburg, V. L., and V. V. Zheleznyakov (1958), On the Possible Mechanisms of Sporadic Solar Radio Emission (Radiation in an Isotropic Plasma), *Soviet Astronomy*, *2*, 653–+.

Gladd, N. T. (1976), The lower hybrid drift instability and the modified two stream instability in high density theta pinch environments, *Plasma Phys.*, *18*, 27–40, doi:10.1088/0032-1028/18/1/002.

Gloeckler, G. (2003), Ubiquitous Suprathermal Tails on the Solar Wind and Pickup Ion Distributions, in *Solar Wind Ten*, *American Institute of Physics Conference Series*, vol. 679, edited by M. Velli, R. Bruno, F. Malara, & B. Bucci, pp. 583–588, doi:10.1063/1.1618663.

Gloeckler, G., J. Geiss, E. C. Roelof, L. A. Fisk, F. M. Ipavich, K. W. Ogilvie, L. J. Lanzerotti, R. von Steiger, and B. Wilken (1994), Acceleration of interstellar pickup ions in the disturbed solar wind observed on ULYSSES, *J. Geophys. Res.*, *99*, 17,637–+, doi:10.1029/94JA01509.

Gloeckler, G., H. Balsiger, A. Bürgi, P. Bochsler, L. A. Fisk, A. B. Galvin, J. Geiss, F. Gliem, D. C. Hamilton, T. E. Holzer, D. Hovestadt, F. M. Ipavich, E. Kirsch, R. A. Lundgren, K. W. Ogilvie, R. B. Sheldon, and B. Wilken (1995), The Solar Wind and Suprathermal Ion Composition Investigation on the Wind Spacecraft, *Space Sci. Rev.*, *71*, 79–124, doi:10.1007/BF00751327.

Goerke, R. T., P. J. Kellogg, and S. J. Monson (1990), An analysis of whistler mode radiation from a 100 mA electron beam, *J. Geophys. Res.*, *95*, 4277–4283, doi:10.1029/JA095iA04p04277.

Goldman, M. V. (1984), Strong turbulence of plasma waves, *Rev. Modern Phys.*, *56*, 709–735, doi:10.1103/RevModPhys.56.709.

Goldman, M. V., M. M. Oppenheim, and D. L. Newman (1999), Nonlinear two-stream instabilities as an explanation for auroral bipolar wave structures, *Geophys. Res. Lett.*, *26*, 1821–1824, doi:10.1029/1999GL900435.

Goldstein, B. E., and B. T. Tsurutani (1984), Wave normal directions of chorus near the equatorial source region, *J. Geophys. Res.*, *89*, 2789–2810, doi:10.1029/JA089iA05p02789.

Goldstein, J., S. G. Kanekal, D. N. Baker, and B. R. Sandel (2005), Dynamic relationship between the outer radiation belt and the plasmapause during March-May 2001, *Geophys. Res. Lett.*, *32*, 15,104–+, doi:10.1029/2005GL023431.

Goodrich, C. C., and J. D. Scudder (1984), The adiabatic energy change of plasma electrons and the frame dependence of the cross-shock potential at collisionless magnetosonic shock waves, *J. Geophys. Res.*, *89*, 6654–6662, doi:10.1029/JA089iA08p06654.

Gopalswamy, N., S. Yashiro, G. Michałek, M. L. Kaiser, R. A. Howard, D. V. Reames, R. Leske, and T. von Rosenvinge (2002), Interacting Coronal Mass Ejections and Solar Energetic Particles, *Astrophys. J.*, *572*, L103–L107, doi:10.1086/341601.

Gopalswamy, N., H. Xie, P. Mäkelä, S. Akiyama, S. Yashiro, M. L. Kaiser, R. A. Howard, and J. Bougeret (2010), Interplanetary Shocks Lacking Type II Radio Bursts, *Astrophys. J.*, *710*, 1111–1126, doi:10.1088/0004-637X/710/2/1111.

Goruganthu, R. R., and W. G. Wilson (1984), Relative electron detection efficiency of microchannel plates from 0-3 keV, *Rev. Sci. Inst.*, *55*, 2030–2033, doi:10.1063/1.1137709.

Gosling, J. T. (1993), The solar flare myth, *J. Geophys. Res.*, *98*, 18,937–18,950, doi:10.1029/93JA01896.

Gosling, J. T., J. R. Asbridge, S. J. Bame, A. J. Hundhausen, and I. B. Strong (1968), Satellite Observations of Interplanetary Shock Waves, *J. Geophys. Res.*, *73*, 43–+, doi:10.1029/JA073i001p00043.

Gosling, J. T., E. Hildner, R. M. MacQueen, R. H. Munro, A. I. Poland, and C. L. Ross (1975), Direct observations of a flare related coronal and solar wind disturbance, *Solar Phys.*, *40*, 439–448, doi:10.1007/BF00162390.

Gosling, J. T., J. R. Asbridge, S. J. Bame, G. Paschmann, and N. Sckopke (1978a), Observations of two distinct populations of bow shock ions in the upstream solar wind, *Geophys. Res. Lett.*, *5*, 957–960, doi:10.1029/GL005i011p00957.

Gosling, J. T., J. R. Asbridge, S. J. Bame, and W. C. Feldman (1978b), Effects of a long entrance aperture upon the azimuthal response of spherical section electrostatic analyzers, *Rev. Sci. Inst.*, *49*, 1260–1268, doi:10.1063/1.1135566.

Gosling, J. T., J. R. Asbridge, S. J. Bame, W. C. Feldman, G. Paschmann, and N. Sckopke (1980), Solar wind ions accelerated to 40 keV by shock wave disturbances, *J. Geophys. Res.*, *85*, 744–752, doi:10.1029/JA085iA02p00744.

Gosling, J. T., M. F. Thomsen, S. J. Bame, W. C. Feldman, G. Paschmann, and N. Sckopke (1982), Evidence for specularly reflected ions upstream from the quasi-parallel bow shock, *Geophys. Res. Lett.*, *9*, 1333–1336, doi:10.1029/GL009i012p01333.

Gosling, J. T., S. J. Bame, W. C. Feldman, G. Paschmann, N. Sckopke, and C. T. Russell (1984), Suprathermal ions upstream from interplanetary shocks, *J. Geophys. Res.*, *89*, 5409–5418, doi:10.1029/JA089iA07p05409.

Gosling, J. T., D. N. Baker, S. J. Bame, W. C. Feldman, R. D. Zwickl, and E. J. Smith (1987), Bidirectional solar wind electron heat flux events, *J. Geophys. Res.*, *92*, 8519–8535, doi:10.1029/JA092iA08p08519.

Gosling, J. T., M. F. Thomsen, S. J. Bame, and C. T. Russell (1989a), Suprathermal electrons at earth's bow shock, *J. Geophys. Res.*, *94*, 10,011–10,025, doi:10.1029/JA094iA08p10011.

Gosling, J. T., M. F. Thomsen, S. J. Bame, and C. T. Russell (1989b), On the source of diffuse, suprathermal ions observed in the vicinity of the earth's bow shock, *J. Geophys. Res.*, *94*, 3555–3563, doi:10.1029/JA094iA04p03555.

Gosling, J. T., M. F. Thomsen, S. J. Bame, and C. T. Russell (1989c), Ion reflection and downstream thermalization at the quasi-parallel bow shock, *J. Geophys. Res.*, *94*, 10,027–10,037, doi:10.1029/JA094iA08p10027.

Gough, M. P., P. J. Christiansen, G. Martelli, and E. J. Gershuny (1979), Interaction of electrostatic waves with warm electrons at the geomagnetic equator, *Nature*, *279*, 515–517, doi:10.1038/279515a0.

Gould, A. (1995), Analytic Error Estimates, *Astrophys. J.*, *440*, 510–+, doi:10.1086/175292.

Greenstadt, E. W. (1976), Energies of backstreaming protons in the foreshock, *Geophys. Res. Lett.*, *3*, 553–556, doi:10.1029/GL003i009p00553.

Greenstadt, E. W. (1991), Quasi-perpendicular/quasi-parallel divisions of earth's bow shock, *J. Geophys. Res.*, *96*, 1697–1703, doi:10.1029/90JA01759.

Greenstadt, E. W., and L. W. Baum (1986), Earth's compressional foreshock boundary revisited Observations by the ISEE 1 magnetometer, *J. Geophys. Res.*, *91*, 9001–9006, doi:10.1029/JA091iA08p09001.

Greenstadt, E. W., and M. M. Mellott (1985), Variable field-to-normal angles in the shock foreshock boundary observed by ISEE 1 and 2, *Geophys. Res. Lett.*, *12*, 129–132, doi:10.1029/GL012i003p00129.

Greenstadt, E. W., and M. M. Mellott (1987), Plasma wave evidence for reflected ions in front of subcritical shocks - ISEE 1 and 2 observations, *J. Geophys. Res.*, *92*, 4730–4734, doi:10.1029/JA092iA05p04730.

Greenstadt, E. W., F. L. Scarf, C. T. Russell, V. Formisano, and M. Neugebauer (1975), Structure of the quasi-perpendicular laminar bow shock, *J. Geophys. Res.*, *80*, 502–514, doi:10.1029/JA080i004p00502.

Greenstadt, E. W., F. L. Scarf, C. T. Russell, R. E. Holzer, V. Formisano, P. C. Hedgecock, and M. Neugebauer (1977), Structure of a quasi-parallel, quasi-laminar bow shock, *J. Geophys. Res.*, *82*, 651–666, doi:10.1029/JA082i004p00651.

Greenstadt, E. W., F. L. Scarf, V. Formisano, C. T. Russell, and M. Neugebauer (1978), Ion acoustic stability analysis of the earth's bow shock, *Geophys. Res. Lett.*, *5*, 399–402, doi:10.1029/GL005i005p00399.

Greenstadt, E. W., C. T. Russell, and M. Hoppe (1980a), Magnetic field orientation and suprathermal ion streams in the earth's foreshock, *J. Geophys. Res.*, *85*, 3473–3479, doi:10.1029/JA085iA07p03473.

Greenstadt, E. W., F. L. Scarf, C. T. Russell, J. T. Gosling, S. J. Bame, G. Paschmann, G. K. Parks, K. A. Anderson, R. R. Anderson, and D. A. Gurnett (1980b), A macroscopic profile of the typical quasi-perpendicular bow shock - Isee 1 and 2, *J. Geophys. Res.*, *85*, 2124–2130, doi:10.1029/JA085iA05p02124.

Greenstadt, E. W., R. W. Fredricks, F. L. Scarf, C. T. Russell, R. R. Anderson, and D. A. Gurnett (1981), Whistler mode wave propagation in the solar wind near the bow shock, *J. Geophys. Res.*, *86*, 4511–4516, doi:10.1029/JA086iA06p04511.

Greenstadt, E. W., F. L. Scarf, R. W. Fredricks, C. F. Kennel, and E. J. Smith (1982a), Plasma wave levels and IMF orientations preceding observations of interplanetary shocks by ISEE-3, *Geophys. Res. Lett.*, *9*, 668–671, doi:10.1029/GL009i006p00668.

Greenstadt, E. W., M. M. Hoppe, and C. T. Russell (1982b), Large-amplitude magnetic variations in quasi-parallel shocks - Correlation lengths measured by ISEE 1 and 2, *Geophys. Res. Lett.*, *9*, 781–784, doi:10.1029/GL009i007p00781.

Greenstadt, E. W., F. V. Coroniti, D. P. Traver, E. J. Smith, and J. A. Slavin (1990), Observations of the flank of earth's bow shock to -110 R(E) by ISEE 3/ICE, *Geophys. Res. Lett.*, *17*, 753–756, doi:10.1029/GL017i006p00753.

Greenstadt, E. W., F. V. Coroniti, S. L. Moses, B. T. Tsurutani, N. Omidi, K. B. Quest, and D. Krauss-Varban (1991), Weak, quasiparallel profiles of earth's bow shock - A comparison between numerical simulations and ISEE 3 observations on the far flank, *Geophys. Res. Lett.*, *18*, 2301–2304, doi:10.1029/91GL02246.

Greenstadt, E. W., F. V. Coroniti, S. L. Moses, and E. J. Smith (1992), Plasma wave profiles of earth's bow shock at low Mach numbers - ISEE 3 observations on the far flank, *J. Geophys. Res.*, *97*, 10,841–+, doi:10.1029/91JA03049.

Greenstadt, E. W., S. L. Moses, F. V. Coroniti, M. H. Farris, and C. T. Russell (1993), The quasiperpendicular environment of large magnetic pulses in Earth's quasiparallel foreshock - ISEE 1 and 2 observations, *Geophys. Res. Lett.*, *20*, 1459–1462, doi:10.1029/93GL00841.

Greenstadt, E. W., G. Le, and R. J. Strangeway (1995a), ULF waves in the foreshock, *Adv. Space Res.*, *15*, 71–84, doi:10.1016/0273-1177(94)00087-H.

Greenstadt, E. W., G. K. Crawford, R. J. Strangeway, S. L. Moses, and F. V. Coroniti (1995b), Spatial distribution of electron plasma oscillations in the Earth's foreshock at ISEE 3, *J. Geophys. Res.*, *100*, 19,933–19,940, doi:10.1029/95JA01400.

Grek, B., and M. Porkolab (1973), Observation of Plasma Heating Due to Parametric Instabilities at the Upper Hybrid and at the Cyclotron Harmonic Frequencies, *Phys. Rev. Lett.*, *30*, 836–839, doi:10.1103/PhysRevLett.30.836.

Gressman, P. T., and R. M. Strain (2010), Global classical solutions of the Boltzmann equation with long-range interactions, *Proc. Nat. Acad. Sci. USA*, *107*, 5744–5749, doi:10.1073/pnas.1001185107.

Gribov, B. É., R. Z. Sagdeev, K. Sëge, V. D. Shapiro, and V. I. Shevchenko (1986), Wave precursors of quasiparallel shock waves, *Sov. Phys.–JETP*, *43*, 291–+.

Griffiths, D. J. (1999), *Introduction to Electrodynamics (3rd Edition)*, Prentice Hall, Upper Saddle River, NJ.

Grimald, S., and O. Santolík (2010), Possible wave modes of wideband nonthermal continuum radiation in its source region, *J. Geophys. Res.*, *115*, 6209–+, doi:10.1029/2009JA014997.

Gringauz, K. I., V. G. Kurt, V. I. Moroz, and I. S. Shklovskii (1960), Results of Observations of Charged Particles Observed Out to R = 100, 000 km, with the Aid of Charged-Particle Traps on Soviet Space Rockets, *Astronomicheskii Zhurnal*, *37*, 716–+.

Gringauz, K. I., A. P. Remizov, M. I. Verigin, A. K. Richter, M. Tatrallyay, K. Szegoe, I. N. Klimenko, I. Apathy, T. I. Gombosi, and T. Szemerey (1986), Electron component of the plasma around Halley's Comet measured by the electrostatic electron analyzer of PLASMAG-1 onboard Vega-2, in *ESLAB Symposium on the Exploration of Halley's Comet*, *ESA Special Publication*, vol. 250, edited by B. Battrick, E. J. Rolfe, & R. Reinhard, pp. 195–198.

Grossmann, A., and J. Morlet (1984), Decomposition of Hardy Functions into Square Integrable Wavelets of Constant Shape, *SIAM J. Math. Anal.*, *15*, 723–736, doi:10.1137/0515056.

Grossmann, A., J. Morlet, and T. Paul (1985), Transforms associated to square integrable group representations. I. General results, *J. Math. Phys.*, *26*, 2473–2479, doi:10.1063/1.526761.

Gruber, S., and G. Bekefi (1968), Excitation of Longitudinal Waves near Electron-Cyclotron Harmonics, *Phys. Fluids*, *11*, 122–133, doi:10.1063/1.1691745.

Guéret, B., B. Lembège, and G. Belmont (1998), Laws for electron pressure variations across a collisionless shock, *J. Geophys. Res.*, *103*, 327–334, doi:10.1029/97JA02258.

Guha, S., and R. Sarkar (1991), Parametric decay of a whistler wave at the difference frequency of two electromagnetic waves in a plasma, *J. Plasma Phys.*, *45*, 115–+, doi:10.1017/S0022377800015531.

Guo, F., and J. Giacalone (2010), The Effect of Large-scale Magnetic Turbulence on the Acceleration of Electrons by Perpendicular Collisionless Shocks, *Astrophys. J.*, *715*, 406–411, doi:10.1088/0004-637X/715/1/406.

Gurgiolo, C., G. K. Parks, B. H. Mauk, K. A. Anderson, R. P. Lin, H. Reme, and C. S. Lin (1981), Non-E x B ordered ion beams upstream of the earth's bow shock, *J. Geophys. Res.*, *86*, 4415–4424, doi:10.1029/JA086iA06p04415.

Gurgiolo, C., M. L. Goldstein, A. F. Viñas, and A. N. Fazakerley (2010), First measurements of electron vorticity in the foreshock and solar wind, *Ann. Geophys.*, *28*, 2187–2200, doi:10.5194/angeo-28-2187-2010.

Gurnett, D. A. (1985), Plasma waves and instabilities, in *Collisionless Shocks in the Heliosphere: Reviews of Current Research*, *Geophys. Monogr. Ser.*, vol. 35, edited by B. T. Tsurutani and R. G. Stone, pp. 207–224, AGU, Washington, D.C.

Gurnett, D. A., and R. R. Anderson (1977), Plasma wave electric fields in the solar wind - Initial results from HELIOS 1, *J. Geophys. Res.*, *82*, 632–650, doi:10.1029/JA082i004p00632.

Gurnett, D. A., and A. Bhattacharjee (2005), *Introduction to Plasma Physics: With Space and Laboratory Applications*, ISBN 0521364833. Cambridge, UK: Cambridge University Press.

Gurnett, D. A., L. A. Frank, and R. P. Lepping (1976), Plasma waves in the distant magnetotail, *J. Geophys. Res.*, *81*, 6059–6071, doi:10.1029/JA081i034p06059.

Gurnett, D. A., F. M. Neubauer, and R. Schwenn (1979a), Plasma wave turbulence associated with an interplanetary shock, *J. Geophys. Res.*, *84*, 541–552, doi:10.1029/JA084iA02p00541.

Gurnett, D. A., E. Marsch, W. Pilipp, R. Schwenn, and H. Rosenbauer (1979b), Ion acoustic waves and related plasma observations in the solar wind, *J. Geophys. Res.*, *84*, 2029–2038, doi:10.1029/JA084iA05p02029.

Gurnett, D. A., W. S. Kurth, and F. L. Scarf (1979c), Plasma wave observations near Jupiter - Initial results from Voyager 2, *Science*, *206*, 987–991, doi:10.1126/science.206.4421.987.

Gurnett, D. A., R. R. Anderson, B. T. Tsurutani, E. J. Smith, G. Paschmann, G. Haerendel, S. J. Bame, and C. T. Russell (1979d), Plasma wave turbulence at the magnetopause - Observations from ISEE 1 and 2, *J. Geophys. Res.*, *84*, 7043–7058, doi:10.1029/JA084iA12p07043.

Gurnett, D. A., W. S. Kurth, and F. L. Scarf (1981a), Plasma waves near Saturn - Initial results from Voyager 1, *Science*, *212*, 235–239, doi:10.1126/science.212.4491.235.

Gurnett, D. A., J. E. Maggs, D. L. Gallagher, W. S. Kurth, and F. L. Scarf (1981b), Parametric interaction and spatial collapse of beam-driven Langmuir waves in the solar wind, *J. Geophys. Res.*, *86*, 8833–8841, doi:10.1029/JA086iA10p08833.

Gurnett, D. A., S. D. Shawhan, and R. R. Shaw (1983a), Auroral hiss, Z mode radiation, and auroral kilometric radiation in the polar magnetosphere - DE 1 observations, *J. Geophys. Res.*, *88*, 329–340, doi:10.1029/JA088iA01p00329.

Gurnett, D. A., W. S. Kurth, and F. L. Scarf (1983b), Narrowband electromagnetic emissions from Jupiter's magnetosphere, *Nature*, *302*, 385–388, doi:10.1038/302385a0.

Gurnett, D. A., G. B. Hospodarsky, W. S. Kurth, D. J. Williams, and S. J. Bolton (1993), Fine structure of Langmuir waves produced by a solar electron event, *J. Geophys. Res.*, *98*, 5631–5637, doi:10.1029/92JA02838.

Gurnett, D. A., A. M. Persoon, R. F. Randall, D. L. Odem, S. L. Remington, T. F. Averkamp, M. M. Debower, G. B. Hospodarsky, R. L. Huff, D. L. Kirchner, M. A. Mitchell, B. T. Pham, J. R. Phillips, W. J. Schintler, P. Sheyko, and D. R. Tomash (1995), The Polar Plasma Wave Instrument, *Space Sci. Rev.*, *71*, 597–622, doi:10.1007/BF00751343.

Gurnett, D. A., R. L. Huff, and D. L. Kirchner (1997), The Wide-Band Plasma Wave Investigation, *Space Sci. Rev.*, *79*, 195–208, doi:10.1023/A:1004966823678.

Hada, T., C. F. Kennel, and T. Terasawa (1987), Excitation of compressional waves and the formation of shocklets in the earth's foreshock, *J. Geophys. Res.*, *92*, 4423–4435, doi: 10.1029/JA092iA05p04423.

Hada, T., M. Oonishi, B. Lembège, and P. Savoini (2003), Shock front nonstationarity of supercritical perpendicular shocks, *J. Geophys. Res.*, *108*, 1233–+, doi:10.1029/2002JA009339.

Hamasaki, S., R. C. Davidson, and N. A. Krall (1971), Calculation of Anomalous Resistance, *Phys. Fluids*, *14*, 2385–2387, doi:10.1063/1.1693345.

Hamelin, M., and C. Beghin (1976), Electromagnetic and electrostatic waves in a multi-component plasma near the lower hybrid frequency, *J. Plasma Phys.*, *15*, 115–131, doi: 10.1017/S0022377800019668.

Hamza, A. M., K. Meziane, and C. Mazelle (2006), Oblique propagation and nonlinear wave particle processes, *J. Geophys. Res.*, *111*, 4104–+, doi:10.1029/2005JA011410.

Hapgood, M. A. (1992), Space physics coordinate transformations - A user guide, *Planet. Space Sci.*, *40*, 711–717, doi: 10.1016/0032-0633(92)90012-D.

Haque, N., M. Spasojevic, O. Santolík, and U. S. Inan (2010), Wave normal angles of magnetospheric chorus emissions observed on the Polar spacecraft, *J. Geophys. Res.*, *115*, 0–+, doi:10.1029/2009JA014717.

Harker, K. J., and F. W. Crawford (1968), Nonlinear Interaction of Cyclotron Harmonic Waves, *J. App. Phys.*, *39*, 5959–5968, doi:10.1063/1.1656098.

Hartle, R. E., and P. A. Sturrock (1968), Two-Fluid Model of the Solar Wind, *Astrophys. J.*, *151*, 1155–+, doi:10.1086/149513.

Haruki, T., J. I. Sakai, and S. Saito (2006), Electromagnetic wave emission during collision between a current sheet and a fast magnetosonic shock associated with coronal mass ejections, *Astro. and Astrophys.*, *455*, 1099–1103, doi:10.1051/0004-6361:20065416.

Harvey, P., F. S. Mozer, D. Pankow, J. Wygant, N. C. Maynard, H. Singer, W. Sullivan, P. B. Anderson, R. Pfaff, T. Aggson, A. Pedersen, C.-G. Fälthammar, and P. Tanskannen (1995), The Electric Field Instrument on the Polar Satellite, *Space Sci. Rev.*, *71*, 583–596, doi:10.1007/BF00751342.

Hashimoto, K., and I. Kimura (1981), A generation mechanism of narrow band hiss emissions above one half the electron cyclotron frequency in the outer magnetosphere, *J. Geophys. Res.*, *86*, 11,148–11,152, doi:10.1029/JA086iA13p11148.

Hawking, S. W. (1974), Black hole explosions?, *Nature*, *248*, 30–31, doi:10.1038/248030a0.

Hayakawa, M., Y. Yamanaka, M. Parrot, and F. Lefeuvre (1984), The wave normals of magnetospheric chorus emissions observed on board GEOS 2, *J. Geophys. Res.*, *89*, 2811–2821, doi:10.1029/JA089iA05p02811.

Hayashi, K., H. Matsui, H. Kawano, T. Yamamoto, and S. Kokubun (1994), Whistler mode waves observed by MGF search coil magnetometer -Polarization and wave normal features of upstream waves near the bow-shock, *Geophys. Res. Lett.*, *21*, 2907–2910, doi:10.1029/94GL01372.

Hayosh, M., O. Santolík, and M. Parrot (2010), Location and size of the global source region of whistler mode chorus, *J. Geophys. Res.*, *115*, 0–+, doi:10.1029/2009JA014950.

Hellinger, P. (2003), Structure and stationarity of quasi-perpendicular shocks: Numerical simulations, *Planet. Space Sci.*, *51*, 649–657.

Hellinger, P., and A. Mangeney (1997a), Upstream whistlers generated by protons reflected from a quasi-perpendicular shock, *J. Geophys. Res.*, *102*, 9809–9820, doi:10.1029/96JA03826.

Hellinger, P., and A. Mangeney (1997b), Structure of Low Mach Number Oblique Shock Waves, in *Correlated Phenomena at the Sun, in the Heliosphere and in Geospace*, *ESA Special Publication*, vol. 415, edited by A. Wilson, pp. 337–+.

Hellinger, P., and A. Mangeney (1999), Electromagnetic ion beam instabilities: Oblique pulsations, *J. Geophys. Res.*, *104*, 4669–4680, doi:10.1029/1998JA900157.

Hellinger, P., and H. Matsumoto (2000), New kinetic instability: Oblique Alfvén fire hose, *J. Geophys. Res.*, *105*, 10,519–10,526, doi:10.1029/1999JA000297.

Hellinger, P., and H. Matsumoto (2001), Nonlinear competition between the whistler and Alfvén fire hoses, *J. Geophys. Res.*, *106*, 13,215–13,218, doi:10.1029/2001JA900026.

Hellinger, P., and P. Trávn ́ıček (2006), Parallel and oblique proton fire hose instabilities in the presence of alpha/proton drift: Hybrid simulations, *J. Geophys. Res.*, *111*, A01,107, doi: 10.1029/2005JA011318.

Hellinger, P., and P. M. Trávníček (2008), Oblique proton fire hose instability in the expanding solar wind: Hybrid simulations, *J. Geophys. Res.*, *113*, A10,109, doi: 10.1029/2008JA013416.

Hellinger, P., and P. M. Trávníček (2009), On Coulomb collisions in bi-Maxwellian plasmas, *Phys. Plasmas*, *16*, 054,501, doi:10.1063/1.3139253.

Hellinger, P., A. Mangeney, and A. Matthews (1996), Whistler waves in 3D hybrid simulations of quasiperpendicular shocks, *Geophys. Res. Lett.*, *23*, 621–624, doi:10.1029/96GL00453.

Hellinger, P., P. Trávníček, and H. Matsumoto (2002), Reformation of perpendicular shocks: Hybrid simulations, *Geophys. Res. Lett.*, *29*(24), 2234, doi:10.1029/2002GL015915.

Hellinger, P., P. Trávníček, and J. D. Menietti (2004), Effective collision frequency due to ion-acoustic instability: Theory and simulations, *Geophys. Res. Lett.*, *31*, 10,806–+, doi: 10.1029/2004GL020028.

Hellinger, P., P. Trávníček, J. C. Kasper, and A. J. Lazarus (2006), Solar wind proton temperature anisotropy: Linear theory and WIND/SWE observations, *Geophys. Res. Lett.*, *33*, 9101–+, doi:10.1029/2006GL025925.

Hellinger, P., P. Trávníček, B. Lembège, and P. Savoini (2007), Emission of nonlinear whistler waves at the front of perpendicular supercritical shocks: Hybrid versus full particle simulations, *Geophys. Res. Lett.*, *34*, 14,109–+, doi: 10.1029/2007GL030239.

Hellinger, P., L. Matteini, v. Štverák, P. M. Trávníček, and E. Marsch (2011), Heating and cooling of protons in the fast solar wind between 0.3 and 1 AU: Helios revisited, *J. Geophys. Res.*, *116*, 9105, doi:10.1029/2011JA016674.

Helliwell, R. A., and T. F. Bell (1960), A New Mechanism for Accelerating Electrons in the Outer Ionosphere, *J. Geophys. Res.*, *65*, 1839–+, doi:10.1029/JZ065i006p01839.

Helliwell, R. A., and N. M. Brice (1964), Very Low Frequency Emission Periods and Whistler Mode Group Delays, *J. Geophys. Res.*, *69*, 4704–4708, doi:10.1029/JZ069i021p04704.

Helliwell, R. A., and T. L. Crystal (1973), A Feedback Model of Cyclotron Interaction between Whistler-Mode Waves and Energetic Electrons in the Magnetosphere, *J. Geophys. Res.*, *78*, 7357–7371, doi:10.1029/JA078i031p07357.

Henri, P., C. Briand, A. Mangeney, S. D. Bale, F. Califano, K. Goetz, and M. Kaiser (2009), Evidence for wave coupling in type III emissions, *J. Geophys. Res.*, *114*, 3103–+, doi: 10.1029/2008JA013738.

Hess, R. A., R. J. MacDowall, B. Goldstein, M. Neugebauer, and R. J. Forsyth (1998), Ion acoustic-like waves observed by ULYSSES near interplanetary shock waves in the three-dimensional heliosphere, *J. Geophys. Res.*, *103*, 6531–+, doi: 10.1029/97JA03395.

Hess, R. A., J. Bougeret, M. Kaiser, S. Bale, B. Cecconi, K. Goetz, S. Hoang, P. Kellogg, R. MacDowall, M. Maksimovic, C. Meetre, and M. Reiner (2006), The STEREO Waves Data System, *AGU Spring Meeting Abstracts*, pp. A7+.

Heyvaerts, J., E. R. Priest, and D. M. Rust (1977), An emerging flux model for the solar flare phenomenon, *Astrophys. J.*, *216*, 123–137, doi:10.1086/155453.

Hikishima, M., S. Yagitani, Y. Omura, and I. Nagano (2009a), Full particle simulation of whistler-mode rising chorus emissions in the magnetosphere, *J. Geophys. Res.*, *114*, 1203–+, doi:10.1029/2008JA013625.

Hikishima, M., S. Yagitani, Y. Omura, and I. Nagano (2009b), Coherent nonlinear scattering of energetic electrons in the process of whistler mode chorus generation, *J. Geophys. Res.*, *114*, 10,205–+, doi:10.1029/2009JA014371.

Hinkel-Lipsker, D. E., B. D. Fried, and G. J. Morales (1992), Analytic expressions for mode conversion in a plasma with a linear density profile, *Physics of Fluids B*, *4*, 559–575, doi: 10.1063/1.860255.

Hiroe, S., and H. Ikegami (1973), Excitation of Obliquely Propagating Cyclotron Harmonic Waves, *J. Phys. Soc. Japan*, *34*, 522–+.

Hiroe, S., S. Tanaka, and K. Takayama (1968), Excitation of Electron Cyclotron Harmonic Waves in Plasmas, *J. Phys. Soc. Japan*, *25*, 874–+.

Ho, G. C., D. Lario, and R. B. Decker (2009), Observations of Particle Acceleration at Interplanetary Shocks, in *American Institute of Physics Conference Series*, *American Institute of Physics Conference Series*, vol. 1183, edited by X. Ao & G. Z. R. Burrows, pp. 19–24, doi:10.1063/1.3266776.

Hobara, Y., V. Y. Trakhtengerts, A. G. Demekhov, and M. Hayakawa (1998), Cyclotron amplification of whistler waves by electron beams in an inhomogeneous magnetic field, *J. Geophys. Res.*, *103*, 20,449–20,458, doi:10.1029/98JA01746.

Hobara, Y., V. W. Trakhtengerts, A. G. Demekhov, and M. Hayakawa (2000), Formation of electron beams by the interaction of a whistler wave packet with radiation belt electrons, *J. Atm. Solar-Terrestrial Phys.*, *62*, 541–552, doi:10.1016/S1364-6826(00)00003-1.

Hobara, Y., S. N. Walker, M. Balikhin, O. A. Pokhotelov, M. Dunlop, H. Nilsson, and H. Rème (2007a), Characteristics of terrestrial foreshock ULF waves: Cluster observations, *J. Geophys. Res.*, *112*, 7202–+, doi:10.1029/2006JA012142.

Hobara, Y., S. N. Walker, M. Dunlop, M. Balikhin, O. A. Pokhotelov, H. Nilsson, and H. Réme (2007b), Mode identification of terrestrial ULF waves observed by Cluster: A case study, *Planet. Space Sci.*, *55*, 2257–2260, doi:10.1016/j.pss.2007.05.020.

Hobara, Y., S. N. Walker, M. Balikhin, O. A. Pokhotelov, M. Gedalin, V. Krasnoselskikh, M. Hayakawa, M. André, M. Dunlop, H. Rème, and A. Fazakerley (2008), Cluster observations of electrostatic solitary waves near the Earth's bow shock, *J. Geophys. Res.*, *113*, 5211–+, doi:10.1029/2007JA012789.

Hobara, Y., M. Balikhin, V. Krasnoselskikh, M. Gedalin, and H. Yamagishi (2010), Statistical study of the quasi-perpendicular shock ramp widths, *J. Geophys. Res.*, *115*, 11,106–+, doi:10.1029/2010JA015659.

Hollweg, J. V. (1978), Alfven waves in the solar atmosphere, *Solar Phys.*, *56*, 305–333, doi:10.1007/BF00152474.

Hollweg, J. V. (1981), Alfven waves in the solar atmosphere. II - Open and closed magnetic flux tubes, *Solar Phys.*, *70*, 25–66, doi:10.1007/BF00154391.

Hollweg, J. V. (1982), Heating of the corona and solar wind by switch-on shocks, *Astrophys. J.*, *254*, 806–813, doi:10.1086/159791.

Hollweg, J. V. (1986), Transition region, corona, and solar wind in coronal holes, *J. Geophys. Res.*, *91*, 4111–4125, doi:10.1029/JA091iA04p04111.

Hollweg, J. V. (2006a), Drivers of the solar wind: then and now, *Royal Society of London Philosophical Transactions Series A*, *364*, 505–527, doi:10.1098/rsta.2005.1713.

Hollweg, J. V. (2006b), On the behavior of O^{+5} in coronal holes: Importance of sunward propagating waves, *J. Geophys. Res.*, *111*, 12,106–+, doi:10.1029/2006JA011917.

Hollweg, J. V., and P. A. Isenberg (2002), Generation of the fast solar wind: A review with emphasis on the resonant cyclotron interaction, *J. Geophys. Res.*, *107*, 1147–+, doi:10.1029/2001JA000270.

Hollweg, J. V., and W. Johnson (1988), Transition region, corona, and solar wind in coronal holes - Some two-fluid models, *J. Geophys. Res.*, *93*, 9547–9554, doi:10.1029/JA093iA09p09547.

Hollweg, J. V., and S. A. Markovskii (2002), Cyclotron resonances of ions with obliquely propagating waves in coronal holes and the fast solar wind, *J. Geophys. Res.*, *107*, 1080–+, doi:10.1029/2001JA000205.

Hollweg, J. V., and J. M. Turner (1978), Acceleration of solar wind He /++/. III - Effects of resonant and nonresonant interaction with transverse waves, *J. Geophys. Res.*, *83*, 97–113, doi:10.1029/JA083iA01p00097.

Hollweg, J. V., and H. J. Völk (1970), Two New Plasma Instabilities in the Solar Wind, *Nature*, *225*, 441–443, doi:10.1038/225441a0.

Hollweg, J. V., S. Jackson, and D. Galloway (1982a), Alfven waves in the solar atmosphere. III - Nonlinear waves on open flux tubes, *Solar Phys.*, *75*, 35–61, doi:10.1007/BF00153458.

Hollweg, J. V., M. K. Bird, H. Volland, P. Edenhofer, C. T. Stelzried, and B. L. Seidel (1982b), Possible evidence for coronal Alfven waves, *J. Geophys. Res.*, *87*, 1–8, doi:10.1029/JA087iA01p00001.

Honzawa, T. (1973), Observations of stable, high Mach number collisionless electrostatic shocks, *Plasma Phys.*, *15*, 467–474, doi:10.1088/0032-1028/15/6/001.

Hoover, W. (Ed.) (1986), *Molecular Dynamics*, *Lecture Notes in Physics, Berlin Springer Verlag*, vol. 258.

Hoover, W. G. (1992), Nonequilibrium molecular dynamics, *Nuclear Physics A*, *545*, 523–536, doi:10.1016/0375-9474(92)90490-B.

Hoppe, M., and C. T. Russell (1980), Whistler mode wave packets in the earth's foreshock region, *Nature*, *287*, 417–420, doi:10.1038/287417a0.

Hoppe, M., and C. T. Russell (1981), On the nature of ULF waves upstream of planetary bow shocks, *Adv. Space Res.*, *1*, 327–332, doi:10.1016/0273-1177(81)90129-0.

Hoppe, M. M., and C. T. Russell (1982), Particle acceleration at planetary bow shock waves, *Nature*, *295*, 41–+, doi:10.1038/295041a0.

Hoppe, M. M., and C. T. Russell (1983), Plasma rest frame frequencies and polarizations of the low-frequency upstream waves - ISEE 1 and 2 observations, *J. Geophys. Res.*, *88*, 2021–2027, doi:10.1029/JA088iA03p02021.

Hoppe, M. M., C. T. Russell, L. A. Frank, T. E. Eastman, and E. W. Greenstadt (1981), Upstream hydromagnetic waves and their association with backstreaming ion populations - ISEE 1 and 2 observations, *J. Geophys. Res.*, *86*, 4471–4492, doi:10.1029/JA086iA06p04471.

Hoppe, M. M., C. T. Russell, T. E. Eastman, and L. A. Frank (1982), Characteristics of the ULF waves associated with upstream ion beams, *J. Geophys. Res.*, *87*, 643–650, doi:10.1029/JA087iA02p00643.

Horbury, T. S., and A. Balogh (2001), Evolution of magnetic field fluctuations in high-speed solar wind streams: Ulysses and Helios observations, *J. Geophys. Res.*, *106*, 15,929–15,940, doi:10.1029/2000JA000108.

Horbury, T. S., P. J. Cargill, E. A. Lucek, A. Balogh, M. W. Dunlop, T. M. Oddy, C. Carr, P. Brown, A. Szabo, and K.-H. Fornaçon (2001), Cluster magnetic field observations of the bowshock: Orientation, motion and structure, *Ann. Geophys.*, *19*, 1399–1409, doi:10.5194/angeo-19-1399-2001.

Horita, R. E. (1972), Wave-particle interaction around the lower hybrid resonance, *Planet. Space Sci.*, *20*, 409–+, doi:10.1016/0032-0633(72)90038-4.

Horiuchi, R., and T. Sato (1999), Three-dimensional particle simulation of plasma instabilities and collisionless reconnection in a current sheet, *Phys. Plasmas*, *6*, 4565–4574, doi:10.1063/1.873744.

Horne, R. B., and R. M. Thorne (1998), Potential waves for relativistic electron scattering and stochastic acceleration during magnetic storms, *Geophys. Res. Lett.*, *25*, 3011–3014, doi:10.1029/98GL01002.

Horne, R. B., and R. M. Thorne (2000), Electron pitch angle diffusion by electrostatic electron cyclotron harmonic waves: The origin of pancake distributions, *J. Geophys. Res.*, *105*, 5391–5402, doi:10.1029/1999JA900447.

Horne, R. B., P. J. Christiansen, M. P. Gough, K. G. Ronnmark, J. F. E. Johnson, J. Sojka, and G. L. Wrenn (1981a), Amplitude variations of electron cyclotron harmonic waves, *Nature*, *294*, 338–340, doi:10.1038/294338a0.

Horne, R. B., P. J. Christiansen, M. P. Gough, J. F. E. Johnson, J. Sojka, G. L. Wrenn, and K. Ronnmark (1981b), ECH wave dispersion - The effects of suprathermal electron distributions, *Adv. Space Res.*, *1*, 353–359, doi:10.1016/0273-1177(81)90133-2.

Horne, R. B., S. A. Glauert, and R. M. Thorne (2003a), Resonant diffusion of radiation belt electrons by whistler-mode chorus, *Geophys. Res. Lett.*, *30*, 090,000–1, doi:10.1029/2003GL016963.

Horne, R. B., R. M. Thorne, N. P. Meredith, and R. R. Anderson (2003b), Diffuse auroral electron scattering by electron cyclotron harmonic and whistler mode waves during an isolated substorm, *J. Geophys. Res.*, *108*, 1290–+, doi:10.1029/2002JA009736.

Horne, R. B., R. M. Thorne, S. A. Glauert, J. M. Albert, N. P. Meredith, and R. R. Anderson (2005), Timescale for radiation belt electron acceleration by whistler mode chorus waves, *J. Geophys. Res.*, *110*, 3225–+, doi:10.1029/2004JA010811.

Horton, W., and D. Choi (1979), Renormalized turbulence theory for the ion acoustic problem, *Phys. Rep.*, *49*, 273–410, doi:10.1016/0370-1573(79)90056-5.

Horton, W., Jr., D.-I. Choi, and R. A. Koch (1976), Ion-acoustic heating from renormalized turbulence theory, *Phys. Rev. A*, *14*, 424–433, doi:10.1103/PhysRevA.14.424.

Hoshino, M. (2005), Electron surfing acceleration in magnetic reconnection, *J. Geophys. Res.*, *110*, 10,215–+, doi:10.1029/2005JA011229.

Hoshino, M., and N. Shimada (2002), Nonthermal Electrons at High Mach Number Shocks: Electron Shock Surfing Acceleration, *Astrophys. J.*, *572*, 880–887, doi:10.1086/340454.

Hoshino, M., T. Mukai, T. Terasawa, and I. Shinohara (2001), Suprathermal electron acceleration in magnetic reconnection, *J. Geophys. Res.*, *106*, 25,979–25,998, doi:10.1029/2001JA900052.

Hu, Y. Q., S. R. Habbal, and X. Li (1999), On the cascade process of Alfvén waves in the fast solar wind, *J. Geophys. Res.*, *104*, 24,819–24,834, doi:10.1029/1999JA900340.

Huang, F., Y. Chen, G. Shi, Z. Hu, H. Peng, J. Zheng, and M. Y. Yu (2009), Lower-hybrid drift instability in a thin current sheet with κ velocity distribution, *Phys. Plasmas*, *16*(4), 042,107–+, doi:10.1063/1.3116643.

Huang, G., D. Wang, and Q. Song (2004), Whistler waves in Freja observations, *J. Geophys. Res.*, *109*, 2307–+, doi:10.1029/2003JA010137.

Huba, J. D., and K. Papadopoulos (1978), Nonlinear stabilization of the lower-hybrid-drift instability by electron resonance broadening, *Phys. Fluids*, *21*, 121–123, doi:10.1063/1.862072.

Huba, J. D., and C. S. Wu (1976), Effects of a magnetic field gradient on the lower hybrid drift instability, *Phys. Fluids*, *19*, 988–994, doi:10.1063/1.861594.

Huba, J. D., N. T. Gladd, and K. Papadopoulos (1977), The lower-hybrid-drift instability as a source of anomalous resistivity for magnetic field line reconnection, *Geophys. Res. Lett.*, *4*, 125–126, doi:10.1029/GL004i003p00125.

Huba, J. D., N. T. Gladd, and K. Papadopoulos (1978), Lower-hybrid-drift wave turbulence in the distant magnetotail, *J. Geophys. Res.*, *83*, 5217–5226, doi:10.1029/JA083iA11p05217.

Hubbard, R. F., and T. J. Birmingham (1978), Electrostatic emissions between electron gyroharmonics in the outer magnetosphere, *J. Geophys. Res.*, *83*, 4837–4850, doi:10.1029/JA083iA10p04837.

Hudgins, L., C. A. Friehe, and M. E. Mayer (1993), Wavelet transforms and atmospheric turbulence, *Phys. Rev. Lett.*, *71*, 3279–3282, doi:10.1103/PhysRevLett.71.3279.

Hull, A. J., and J. D. Scudder (2000), Model for the partition of temperature between electrons and ions across collisionless, fast mode shocks, *J. Geophys. Res.*, *105*, 27,323–27,342, doi:10.1029/2000JA900105.

Hull, A. J., J. D. Scudder, L. A. Frank, W. R. Paterson, and M. G. Kivelson (1998), Electron heating and phase space signatures at strong and weak quasi-perpendicular shocks, *J. Geophys. Res.*, *103*, 2041–2054, doi:10.1029/97JA03058.

Hull, A. J., J. D. Scudder, R. J. Fitzenreiter, K. W. Ogilvie, J. A. Newbury, and C. T. Russell (2000), Electron temperature and de Hoffmann-Teller potential change across the Earth's bow shock: New results from ISEE 1, *J. Geophys. Res.*, *105*, 20,957–20,972, doi:10.1029/2000JA900049.

Hull, A. J., J. D. Scudder, D. E. Larson, and R. Lin (2001), Electron heating and phase space signatures at supercritical, fast mode shocks, *J. Geophys. Res.*, *106*, 15,711–15,734, doi:10.1029/2001JA900001.

Hull, A. J., J. W. Bonnell, F. S. Mozer, and J. D. Scudder (2003), A statistical study of large-amplitude parallel electric fields in the upward current region of the auroral acceleration region, *J. Geophys. Res.*, *108*, 1007–+, doi:10.1029/2001JA007540.

Hull, A. J., D. E. Larson, M. Wilber, J. D. Scudder, F. S. Mozer, C. T. Russell, and S. D. Bale (2006), Large-amplitude electrostatic waves associated with magnetic ramp substructure at Earth's bow shock, *Geophys. Res. Lett.*, *33*, 15,104–+, doi:10.1029/2005GL025564.

Hundhausen, A. J., S. J. Bame, and N. F. Ness (1967), Solar Wind Thermal Anisotropies: Vela 3 and IMP 3, *J. Geophys. Res.*, *72*, 5265–+, doi:10.1029/JZ072i021p05265.

Hupach, A. J., C. A. Cattell, A. W. Breneman, K. Kersten, L. B. Wilson III, and K. Goetz (2012), STEREO observations of waves near the ramp region of interplanetary shocks, *AGU Fall Meeting Abstracts*, pp. SH21B–2207, dec. 3-7, San Francisco, CA.

Huttunen, K. E. J., S. D. Bale, T. D. Phan, M. Davis, and J. T. Gosling (2007), Wind/WAVES observations of high-frequency plasma waves in solar wind reconnection exhausts, *J. Geophys. Res.*, *112*, 1102–+.

Huttunen, K. E. J., S. D. Bale, and C. Salem (2008), Wind observations of low energy particles within a solar wind reconnection region, *Ann. Geophys.*, *26*, 2701–2710.

Huttunen-Heikinmaa, K., and E. Valtonen (2009), Interplanetary fast forward shocks and energetic storm particle events above 1.5 MeV, *Ann. Geophys.*, *27*, 767–779.

Hwang, J. A., D. Lee, L. R. Lyons, A. J. Smith, S. Zou, K. W. Min, K. Kim, Y. Moon, and Y. D. Park (2007), Statistical significance of association between whistler-mode chorus enhancements and enhanced convection periods during high-speed streams, *J. Geophys. Res.*, *112*, 9213–+, doi:10.1029/2007JA012388.

Inan, U. S., M. Platino, T. F. Bell, D. A. Gurnett, and J. S. Pickett (2004), Cluster measurements of rapidly moving sources of ELF/VLF chorus, *J. Geophys. Res.*, *109*, 5214–+, doi:10.1029/2003JA010289.

Ishihara, O., and A. Hirose (1981), Quasilinear mechanism of high-energy ion-tail formation in the ion-acoustic instability, *Phys. Rev. Lett.*, *46*, 771–774, doi:10.1103/PhysRevLett.46.771.

Ishihara, O., and A. Hirose (1983a), High-energy ion tail formation in the ion-acoustic instability Three-dimensional quasilinear approach, *Phys. Fluids*, *26*, 100–105, doi:10.1063/1.863996.

Ishihara, O., and A. Hirose (1983b), Quasilinear evolution of current-driven ion-acoustic instability in a magnetic field, *Phys. Rev. Lett.*, *50*, 1783–1786, doi:10.1103/PhysRevLett.50.1783.

Istomin, Y. N., and T. B. Leyser (1995), Parametric decay of an electromagnetic wave near electron cyclotron harmonics, *Phys. Plasmas*, *2*, 2084–2097, doi:10.1063/1.871295.

Jackson, J. D. (1960), Longitudinal plasma oscillations, *Journal of Nuclear Energy*, *1*, 171–189, doi:10.1088/0368-3281/1/4/301.

Jackson, J. D. (1998), *Classical Electrodynamics, 3rd Edition*, John Wiley & Sons, Inc., New York, NY.

Jacques, S. A. (1977), Momentum and energy transport by waves in the solar atmosphere and solar wind, *Astrophys. J.*, *215*, 942–951, doi:10.1086/155430.

Jain, H. C., and S. R. Sharma (1979), Effect of flat top electron distribution on the turbulent heating of a plasma, *Beitraege Plasmaphysik*, *19*, 19–24.

Ji, H., S. Terry, M. Yamada, R. Kulsrud, A. Kuritsyn, and Y. Ren (2004), Electromagnetic Fluctuations during Fast Reconnection in a Laboratory Plasma, *Phys. Rev. Lett.*, *92*, 115,001–+, doi:10.1103/PhysRevLett.92.115001.

Ji, H., R. Kulsrud, and M. Yamada (2005a), Magnetic Reconnection, Turbulence, and Collisionless Shock, *Astrophys. and Space Sci.*, *298*, 219–226, doi:10.1007/s10509-005-3936-y.

Ji, H., R. Kulsrud, W. Fox, and M. Yamada (2005b), An obliquely propagating electromagnetic drift instability in the lower hybrid frequency range, *J. Geophys. Res.*, *110*, 8212–+, doi:10.1029/2005JA011188.

Jian, L. K., C. T. Russell, A. Figueroa-Vinas, L. B. Wilson III, A. Szabo, M. L. Stevens, and J. C. Kasper (2012), Observations of Ion Cyclotron Waves Using Wind: How Are They Related to Solar Wind Parameters?, *Thirteenth International Solar Wind Conference*, june 18-22, 2012, Hawaii.

Jones, D. (1980), Latitudinal beaming of planetary radio emissions, *Nature*, *288*, 225–229, doi:10.1038/288225a0.

Jones, D. (1982), Plasma waves in the earth's magnetosphere, *Adv. Space Res.*, *2*, 25–31, doi:10.1016/0273-1177(82)90088-6.

Jones, D., W. Calvert, D. A. Gurnett, and R. L. Huff (1987), Observed beaming of terrestrial myriametric radiation, *Nature*, *328*, 391–395.

Jones, F. C., and D. C. Ellison (1991), The plasma physics of shock acceleration, *Space Sci. Rev.*, *58*, 259–346, doi:10.1007/BF01206003.

Jory, H. R., and A. W. Trivelpiece (1968), Charged-Particle Motion in Large-Amplitude Electromagnetic Fields, *J. Appl. Phys.*, *39*, 3053–3060, doi:10.1063/1.1656732.

Kahler, S. (1987), Coronal mass ejections, *Rev. Geophys.*, *25*, 663–675, doi:10.1029/RG025i003p00663.

Kahler, S. W. (1992), Solar flares and coronal mass ejections, *Ann. Rev. Astron. Astrophys.*, *30*, 113–141, doi:10.1146/annurev.aa.30.090192.000553.

Kahler, S. W., N. R. Sheeley, Jr., R. A. Howard, D. J. Michels, M. J. Koomen, R. E. McGuire, T. T. von Rosenvinge, and D. V. Reames (1984), Associations between coronal mass ejections and solar energetic proton events, *J. Geophys. Res.*, *89*, 9683–9693, doi:10.1029/JA089iA11p09683.

Kahler, S. W., N. R. Sheeley, Jr., and M. Liggett (1989), Coronal mass ejections and associated X-ray flare durations, *Astrophys. J.*, *344*, 1026–1033, doi:10.1086/167869.

Kang, H., and T. W. Jones (1995), Diffusive Shock Acceleration Simulations: Comparison with Particle Methods and Bow Shock Measurements, *Astrophys. J.*, *447*, 944–+, doi:10.1086/175932.

Kappernman, J. G., and V. D. Albertson (1990), Bracing for the geomagnetic storms, *IEEE Spectrum*, *27*, 27–33, doi:10.1109/6.48847.

Karimabadi, H., C. R. Menyuk, P. Sprangle, and L. Vlahos (1987), Electron cyclotron harmonic wave acceleration, *Astrophys. J.*, *316*, 462–472, doi:10.1086/165215.

Karney, C. F. F., and A. Bers (1977), Stochastic ion heating by a perpendicularly propagating electrostatic wave, *Phys. Rev. Lett.*, *39*, 550–554, doi:10.1103/PhysRevLett.39.550.

Kasaba, Y., H. Matsumoto, Y. Omura, R. R. Anderson, T. Mukai, Y. Saito, T. Yamamoto, and S. Kokubun (2000), Statistical studies of plasma waves and backstreaming electrons in the terrestrial electron foreshock observed by Geotail, *J. Geophys. Res.*, *105*, 79–104, doi:10.1029/1999JA900408.

Kasahara, Y., Y. Miyoshi, Y. Omura, O. P. Verkhoglyadova, I. Nagano, I. Kimura, and B. T. Tsurutani (2009), Simultaneous satellite observations of VLF chorus, hot and relativistic electrons in a magnetic storm "recovery" phase, *Geophys. Res. Lett.*, *36*, 1106–+, doi:10.1029/2008GL036454.

Kasper, J. C. (2007), Interplanetary Shock Database, harvard-Smithsonian Center for Astrophysics, Online: *http://www.cfa.harvard.edu/shocks/*.

Kasper, J. C., A. J. Lazarus, and S. P. Gary (2002), Wind/SWE observations of firehose constraint on solar wind proton temperature anisotropy, *Geophys. Res. Lett.*, *29*(17), 170,000–1, doi:10.1029/2002GL015128.

Kasper, J. C., A. J. Lazarus, S. P. Gary, and A. Szabo (2003), Solar Wind Temperature Anisotropies, in *Solar Wind Ten*, *American Institute of Physics Conference Series*, vol. 679, edited by M. Velli, R. Bruno, F. Malara, & B. Bucci, pp. 538–541, doi:10.1063/1.1618653.

Kasper, J. C., A. J. Lazarus, J. T. Steinberg, K. W. Ogilvie, and A. Szabo (2006), Physics-based tests to identify the accuracy of solar wind ion measurements: A case study with the Wind Faraday Cups, *J. Geophys. Res.*, *111*, 3105–+, doi:10.1029/2005JA011442.

Kasper, J. C., M. L. Stevens, A. J. Lazarus, J. T. Steinberg, and K. W. Ogilvie (2007), Solar Wind Helium Abundance as a Function of Speed and Heliographic Latitude: Variation through a Solar Cycle, *Astrophys. J.*, *660*, 901–910, doi:10.1086/510842.

Kasper, J. C., A. J. Lazarus, and S. P. Gary (2008), Hot Solar-Wind Helium: Direct Evidence for Local Heating by Alfvén-Cyclotron Dissipation, *Phys. Rev. Lett.*, *101*, 261,103–+, doi:10.1103/PhysRevLett.101.261103.

Kasper, J. C., B. A. Maruca, and S. D. Bale (2009), An association between anisotropic plasma heating and instabilities in the solar wind, *ArXiv e-prints*.

Kataoka, R., S. Watari, N. Shimada, H. Shimazu, and K. Marubashi (2005), Downstream structures of interplanetary fast shocks associated with coronal mass ejections, *Geophys. Res. Lett.*, *32*, 12,103–+, doi:10.1029/2005GL022777.

Kato, T. N., and H. Takabe (2010), Electrostatic and electromagnetic instabilities associated with electrostatic shocks: Two-dimensional particle-in-cell simulation, *Phys. Plasmas*, *17*(3), 032,114–+, doi:10.1063/1.3372138.

Katoh, Y., Y. Omura, and D. Summers (2008), Rapid energization of radiation belt electrons by nonlinear wave trapping, *Ann. Geophys.*, *26*, 3451–3456.

Kaur, S., A. K. Sharma, and H. A. Salih (2009), Resonant second harmonic generation of a Gaussian electromagnetic beam in a collisional magnetoplasma, *Phys. Plasmas*, *16*, 042,509–+, doi:10.1063/1.3114970.

Kawano, H., and T. Higuchi (1995), The bootstrap method in space physics: Error estimation for the minimum variance analysis, *Geophys. Res. Lett.*, *22*, 307–310, doi:10.1029/94GL02969.

Kawano, H., S. M. Petrinec, C. T. Russell, and T. Higuchi (1999), Magnetopause shape determinations from measured position and estimated flaring angle, *J. Geophys. Res.*, *104*, 247–262, doi:10.1029/98JA02479.

Kellogg, P. J. (1959), Van Allen Radiation of Solar Origin, *Nature*, *183*, 1295–1297, doi:10.1038/1831295a0.

Kellogg, P. J. (1960a), Electrons of the Van Allen Radiation, *J. Geophys. Res.*, *65*, 2705–+, doi:10.1029/JZ065i009p02705.

Kellogg, P. J. (1960b), Calculations of Cosmic-Ray Trajectories near the Equator, *J. Geophys. Res.*, *65*, 2701–+, doi:10.1029/JZ065i009p02701.

Kellogg, P. J. (1962), Flow of Plasma around the Earth, *J. Geophys. Res.*, *67*, 3805–+, doi:10.1029/JZ067i010p03805.

Kellogg, P. J. (1963a), Auroral X-rays, electron bombardment and trapped radiation, *Planet. Space Sci.*, *10*, 165–178, doi:10.1016/0032-0633(63)90014-X.

Kellogg, P. J. (1963b), Shock Waves in Interplanetary Plasma, in *International Cosmic Ray Conference*, *Int. Cosmic Ray Conf.*, vol. 1, pp. 220–+.

Kellogg, P. J. (1963c), Radiation Belts and Solar Activity, in *International Cosmic Ray Conference*, *Int. Cosmic Ray Conf.*, vol. 1, pp. 233–+.

Kellogg, P. J. (1964a), Solitary Waves in Cold Collisionless Plasma, *Phys. Fluids*, *7*, 1555–1571, doi:10.1063/1.1711061.

Kellogg, P. J. (1964b), Auroral X-rays, electron bombardment and trapped radiation, in *Theoretical Interpretation of Upper Atmosphere Emission*, *IAU Symposium*, vol. 18, edited by D. R. Bates, pp. 165–+.

Kellogg, P. J. (1965), Some Properties of the Two-Stream Instability at Large Amplitudes, *Physics of Fluids*, *8*, 102–110, doi:10.1063/1.1761074.

Kellogg, P. J. (1986), Observations concerning the generation and propagation of Type III solar bursts, *Astron. & Astrophys.*, *169*, 329–335.

Kellogg, P. J. (2000), Fluctuations and Ion Isotropy in the Solar Wind, *Astrophys. J.*, *528*, 480–485, doi:10.1086/308147.

Kellogg, P. J. (2003), Langmuir waves associated with collisionless shocks; a review, *Planet. Space Sci.*, *51*, 681–691.

Kellogg, P. J. (2008), Measuring Electric Field and Density Turbulence in the Solar Wind, in *American Institute of Physics Conference Series*, *American Institute of Physics Conference Series*, vol. 1039, pp. 87–92, doi:10.1063/1.2982490.

Kellogg, P. J., and S. D. Bale (2001), Antenna-plasma and antenna-spacecraft resistance on the Wind spacecraft, *J. Geophys. Res.*, *106*, 18,721–18,728, doi:10.1029/2001JA900051.

Kellogg, P. J., and S. D. Bale (2004), Nearly monochromatic waves in the distant tail of the Earth, *J. Geophys. Res.*, *109*, 4223–+, doi:10.1029/2003JA010131.

Kellogg, P. J., and H. Liemohn (1960), Instability of Contra-Streaming Plasmas, *Phys. Fluids*, *3*, 40–44, doi:10.1063/1.1706000.

Kellogg, P. J., and E. P. Ney (1959), A New Theory of the Solar Corona, *Nature*, *183*, 1297–1301, doi:10.1038/1831297a0.

Kellogg, P. J., and J. R. Winckler (1961), Cosmic-Ray Evidence for a Ring Current, *J. Geophys. Res.*, *66*, 3991–4001, doi:10.1029/JZ066i012p03991.

Kellogg, P. J., and J. R. Winckler (1962), Cosmic Ray Evidence for a Ring Current, *J. Phys. Soc. Japan Suppl.*, *17*, B408+.

Kellogg, P. J., E. P. Ney, and J. R. Winckler (1959), Geophysical Effects Associated with High-Altitude Explosions, *Nature*, *183*, 358–361, doi:10.1038/183358a0.

Kellogg, P. J., S. J. Monson, W. Bernstein, and B. A. Whalen (1986), Observations of waves generated by electron beams in the ionosphere, *J. Geophys. Res.*, *91*, 12,065–12,077, doi:10.1029/JA091iA11p12065.

Kellogg, P. J., S. J. Monson, and B. A. Whalen (1990), Observation of an antenna-plasma instability, *J. Geophys. Res.*, *95*, 7773–7788, doi:10.1029/JA095iA06p07773.

Kellogg, P. J., K. Goetz, N. Lin, S. J. Monson, A. Balogh, R. J. Forsyth, and R. G. Stone (1992a), Low frequency magnetic signals associated with Langmuir waves, *Geophys. Res. Lett.*, *19*, 1299–1302, doi:10.1029/92GL01033.

Kellogg, P. J., K. Goetz, R. L. Howard, and S. J. Monson (1992b), Evidence for Langmuir wave collapse in the interplanetary plasma, *Geophys. Res. Lett.*, *19*, 1303–1306, doi:10.1029/92GL01016.

Kellogg, P. J., K. Goetz, S. J. Monson, A. Balogh, and R. J. Forsyth (1996a), Some remarks on waves in the solar wind., in *American Institute of Physics Conference Series*, *American Institute of Physics Conference Series*, vol. 382, edited by D. Winterhalter, J. T. Gosling, S. R. Habbal, W. S. Kurth, and M. Neugebauer, pp. 214–219, doi:10.1063/1.51387.

Kellogg, P. J., S. J. Monson, K. Goetz, R. L. Howard, J.-L. Bougeret, and M. L. Kaiser (1996b), Early wind observations of bow shock and foreshock waves, *Geophys. Res. Lett.*, *23*, 1243–1246, doi:10.1029/96GL01067.

Kellogg, P. J., K. Goetz, S. J. Monson, J.-L. Bougeret, R. Manning, and M. L. Kaiser (1996c), Observations of plasma waves during a traversal of the moon's wake, *Geophys. Res. Lett.*, *23*, 1267–1270, doi:10.1029/96GL00376.

Kellogg, P. J., K. Goetz, S. J. Monson, and S. D. Bale (1999a), A search for Langmuir solitons in the Earth's foreshock, *J. Geophys. Res.*, *104*, 6751–6758, doi:10.1029/1999JA900021.

Kellogg, P. J., K. Goetz, S. J. Monson, and J. R. Wygant (1999b), A density and current plasma wave antenna, *J. Geophys. Res.*, *104*, 12,627–12,636, doi:10.1029/1999JA900095.

Kellogg, P. J., K. Goetz, S. J. Monson, and S. D. Bale (1999c), Langmuir waves in a fluctuating solar wind, *J. Geophys. Res.*, *104*, 17,069–17,078, doi:10.1029/1999JA900163.

Kellogg, P. J., D. A. Gurnett, G. B. Hospodarsky, and W. S. Kurth (2001), Ion isotropy and ion resonant waves in the solar wind: Cassini observations, *Geophys. Res. Lett.*, *28*, 87–90, doi:10.1029/2000GL012100.

Kellogg, P. J., D. A. Gurnett, G. B. Hospodarsky, W. S. Kurth, M. K. Dougherty, and R. J. Forsyth (2003), Ion isotropy and ion resonant waves in the solar wind: Corrected Cassini observations, *J. Geophys. Res.*, *108*, 1045–+, doi:10.1029/2002JA009312.

Kellogg, P. J., S. D. Bale, F. S. Mozer, T. S. Horbury, and H. Reme (2006), Solar Wind Electric Fields in the Ion Cyclotron Frequency Range, *Astrophys. J.*, *645*, 704–710, doi:10.1086/499265.

Kellogg, P. J., C. A. Cattell, and L. B. Wilson III (2009a), Whistlers and Electron Trapping in the Earth's Magnetosphere, *Geophysical Research Abstracts, EGU General Assembly*, *11*, A13,452+.

Kellogg, P. J., C. A. Cattell, and L. B. Wilson III (2009b), Electron Trapping in Large Amplitude Whistlers, *AGU Fall Meeting Abstracts*, pp. C01+.

Kellogg, P. J., K. Goetz, and S. J. Monson (2010a), Harmonics of langmuir waves in the Earth's foreshock, *J. Geophys. Res.*, *115*, 6107–+, doi:10.1029/2009JA014635.

Kellogg, P. J., C. A. Cattell, K. Goetz, S. J. Monson, and L. B. Wilson III (2010b), Electron trapping and charge transport by large amplitude whistlers, *Geophys. Res. Lett.*, *37*, 20,106–+, doi:10.1029/2010GL044845.

Kellogg, P. J., C. A. Cattell, K. Goetz, S. J. Monson, and L. B. Wilson III (2011), Large amplitude whistlers in the magnetosphere observed with Wind-Waves, *J. Geophys. Res.*, *116*, A09,224, doi:10.1029/2010JA015919.

Kennel, C. F. (1981), Collisionless shocks and upstream waves and particles - Introductory remarks, *J. Geophys. Res.*, *86*, 4325–4329, doi:10.1029/JA086iA06p04325.

Kennel, C. F. (1987), Critical Mach numbers in classical magnetohydrodynamics, *J. Geophys. Res.*, *92*, 13,427–13,437, doi:10.1029/JA092iA12p13427.

Kennel, C. F. (1988), Shock structure in classical magnetohydrodynamics, *J. Geophys. Res.*, *93*, 8545–8557, doi:10.1029/JA093iA08p08545.

Kennel, C. F., and F. Engelmann (1966), Velocity Space Diffusion from Weak Plasma Turbulence in a Magnetic Field, *Phys. Fluids*, *9*, 2377–2388, doi:10.1063/1.1761629.

Kennel, C. F., and H. E. Petscheck (1966), Limit on stably trapped particle fluxes, *J. Geophys. Res.*, *71*, 1–28.

Kennel, C. F., and H. E. Petschek (1968), Magnetic Turbulence in Shocks, in *Physics of the Magnetosphere*, *Astrophysics and Space Science Library*, vol. 10, edited by R. D. L. Carovillano and J. F. McClay, pp. 485–+.

Kennel, C. F., and R. Z. Sagdeev (1967a), Collisionless shock waves in high beta plasmas, 1, *J. Geophys. Res.*, *72*, 3303–3326.

Kennel, C. F., and R. Z. Sagdeev (1967b), Collisionless shock waves in high beta plasmas, 2, *J. Geophys. Res.*, *72*, 3327–3341.

Kennel, C. F., and F. L. Scarf (1968), Thermal anisotropies and electromagnetic instabilities in the solar wind, *J. Geophys. Res.*, *73*, 6149–6165.

Kennel, C. F., and R. M. Thorne (1967), Unstable Growth of Unducted Whistlers Propagating at an Angle to the Geomagnetic Field, *J. Geophys. Res.*, *72*, 871–+, doi:10.1029/JZ072i003p00871.

Kennel, C. F., F. L. Scarf, R. W. Fredricks, J. H. McGehee, and F. V. Coroniti (1970), VLF Electric Field Observations in the Magnetosphere, *J. Geophys. Res.*, *75*, 6136–6152, doi:10.1029/JA075i031p06136.

Kennel, C. F., F. V. Coroniti, F. L. Scarf, R. W. Fredricks, D. A. Gurnett, and E. J. Smith (1980), Correlated whistler and electron plasma oscillation bursts detected on ISEE-3, *Geophys. Res. Lett.*, *7*, 129–132, doi:10.1029/GL007i002p00129.

Kennel, C. F., F. V. Coroniti, F. L. Scarf, E. J. Smith, and D. A. Gurnett (1982), Nonlocal plasma turbulence associated with interplanetary shocks, *J. Geophys. Res.*, *87*, 17–34, doi:10.1029/JA087iA01p00017.

Kennel, C. F., F. L. Scarf, F. V. Coroniti, C. T. Russell, K.-P. Wenzel, T. R. Sanderson, P. van Nes, E. J. Smith, B. T. Tsurutani, and J. D. Scudder (1984a), Plasma and energetic particle structure upstream of a quasi-parallel interplanetary shock, *J. Geophys. Res.*, *89*, 5419–5435, doi:10.1029/JA089iA07p05419.

Kennel, C. F., J. P. Edmiston, C. T. Russell, F. L. Scarf, F. V. Coroniti, E. J. Smith, B. T. Tsurutani, J. D. Scudder, W. C. Feldman, and R. R. Anderson (1984b), Structure of the November 12, 1978, quasi-parallel interplanetary shock, *J. Geophys. Res.*, *89*, 5436–5452, doi:10.1029/JA089iA07p05436.

Kennel, C. F., J. P. Edmiston, and T. Hada (1985), A quarter century of collisionless shock research, in *Collisionless Shocks in the Heliosphere: A Tutorial Review*, *Geophys. Monogr. Ser.*, vol. 34, edited by R. G. Stone and B. T. Tsurutani, pp. 1–36, AGU, Washington, D.C.

Kennel, C. F., F. V. Coroniti, F. L. Scarf, B. T. Tsurutani, and E. J. Smith, Jr. (1986a), Plasma waves in the shock interaction regions at Comet Giacobini-Zinner, *Geophys. Res. Lett.*, *13*, 921–924, doi:10.1029/GL013i009p00921.

Kennel, C. F., F. V. Coroniti, F. L. Scarf, W. A. Livesey, C. T. Russell, and E. J. Smith (1986b), A test of Lee's quasi-linear theory of ion acceleration by interplanetary traveling shocks, *J. Geophys. Res.*, *91*, 11,917–11,928, doi:10.1029/JA091iA11p11917.

Kersten, K., C. Cattell, P. Kellogg, K. Goetz, S. Bale, and M. Maksimovic (2008), STEREO Observations of Large Amplitude, Low Frequency Waves in the Solar Wind, *AGU Spring Meeting Abstracts*, pp. A22+.

Kersten, K., C. A. Cattell, A. W. Breneman, K. Goetz, P. J. Kellogg, L. B. Wilson III, J. R. Wygant, J. Blake, M. D. Looper, and I. Roth (2010), Observation of relativistic electron microbursts in conjunction with intense radiation belt whistlers, *AGU Fall Meeting Abstracts*, pp. C1910+.

Kersten, K., C. A. Cattell, A. Breneman, K. Goetz, P. J. Kellogg, L. B. Wilson III, J. R. Wygant, J. B. Blake, M. D. Looper, and I. Roth (2011a), Observation of relativistic electron microbursts in conjunction with intense radiation belt whistler-mode waves, *ArXiv e-prints*.

Kersten, K., C. A. Cattell, A. Breneman, K. Goetz, P. J. Kellogg, J. R. Wygant, L. B. Wilson III, J. B. Blake, M. D. Looper, and I. Roth (2011b), Observation of relativistic electron microbursts in conjunction with intense radiation belt whistler-mode waves, *Geophys. Res. Lett.*, *38*, 8107–+, doi:10.1029/2011GL046810.

Khabibrakhmanov, I. K., A. A. Galeev, and V. L. Galinskii (1993), Collisionless parallel shocks, *J. Geophys. Res.*, *98*, 1293–1301, doi:10.1029/92JA02264.

Khotyaintsev, M. V., V. N. Mel'Nik, B. Thidé, and Y. V. Khotyaintsev (2010), Radar detection of interplanetary shocks: Scattering by anisotropic Langmuir turbulence, *Adv. Space Res.*, *45*, 804–811, doi:10.1016/j.asr.2009.12.005.

Khrabrov, A. V., and B. U. Ö. Sonnerup (1998), Error estimates for minimum variance analysis, *J. Geophys. Res.*, *103*, 6641–6652, doi:10.1029/97JA03731.

Kim, E., I. H. Cairns, and P. A. Robinson (2008), Mode conversion of Langmuir to electromagnetic waves at magnetic field-aligned density inhomogeneities: Simulations, theory, and applications to the solar wind and the corona, *Phys. Plasmas*, *15*, 102,110–+, doi:10.1063/1.2994719.

Kirov, K. K., M.-L. Mayoral, J. Mailloux, Y. Baranov, L. Colas, A. Ekedahl, K. Erents, M. Goniche, A. Korotkov, P. Morgan, V. Petrzilka, J. Ongena, K. Rantamäki, M. Stamp, and JET EFDA Contributors (2009), Effects of ICRF induced density modifications on LH wave coupling at JET, *Plasma Phys. & Controlled Fusion*, *51*(4), 044,003–+, doi:10.1088/0741-3335/51/4/044003.

Kis, A., M. Scholer, B. Klecker, E. Möbius, E. A. Lucek, H. Rème, J. M. Bosqued, L. M. Kistler, and H. Kucharek (2004), Multi-spacecraft observations of diffuse ions upstream of Earth's bow shock, *Geophys. Res. Lett.*, *31*, 20,801–+, doi:10.1029/2004GL020759.

Kis, A., M. Scholer, B. Klecker, H. Kucharek, E. A. Lucek, and H. Rème (2007), Scattering of field-aligned beam ions upstream of Earth's bow shock, *Ann. Geophys.*, *25*, 785–799.

Klimov, S., S. Savin, Y. Aleksevich, G. Avanesova, V. Balebanov, M. Balikhin, A. Galeev, B. Gribov, M. Nozdrachev, V. Smirnov, A. Sokolov, O. Vaisberg, P. Oberc, Z. Krawczyk, S. Grzedzielski, J. Juchniewicz, K. Nowak, D. Orlowski, B. Parfianovich, D. Wozniak, Z. Zbyszynski, Y. Voita, and P. Triska (1986), Extremely-low-frequency plasma waves in the environment of comet Halley, *Nature*, *321*, 292–+, doi:10.1038/321292a0.

Kogan, V. I. (1961), The rate of equalization of the temperatures of charged particles in a plasma, in *Plasma Physics and the Problem of Controlled Thermonuclear Reactions, Volume 1*, edited by M. A. Leontovich, p. 153.

Kojima, H., H. Furuya, H. Usui, and H. Matsumoto (1997), Modulated electron plasma waves observed in the tail lobe: Geotail waveform observations, *Geophys. Res. Lett.*, *24*, 3049–3052, doi:10.1029/97GL03043.

Koons, H. C., and J. F. Fennell (1984), Fine structure in electrostatic emission bands between electron gyrofrequency harmonics, *J. Geophys. Res.*, *89*, 3015–3018, doi:10.1029/JA089iA05p03015.

Koons, H. C., and J. L. Roeder (1990), A survey of equatorial magnetospheric wave activity between 5 and 8 R(E), *Planet. Space Sci.*, *38*, 1335–1341, doi:10.1016/0032-0633(90)90136-E.

Korreck, K. E., T. H. Zurbuchen, S. T. Lepri, and J. M. Raines (2007), Heating of Heavy Ions by Interplanetary Coronal Mass Ejection Driven Collisionless Shocks, *Astrophys. J.*, *659*, 773–779, doi:10.1086/512360.

Kosten, L. (1943), On the frequency distribution of the number of discharges counted by a Geiger-Müller counter in a constant interval, *Physica*, *10*, 749–756, doi:10.1016/S0031-8914(43)90055-2.

Koval, A., and A. Szabo (2008), Modified "Rankine-Hugoniot" shock fitting technique: Simultaneous solution for shock normal and speed, *J. Geophys. Res.*, *113*, 10,110–+, doi:10.1029/2008JA013337.

Koval, A., and A. Szabo (2010), Multispacecraft observations of interplanetary shock shapes on the scales of the Earth's magnetosphere, *J. Geophys. Res.*, *115*, 12,105–+, doi:10.1029/2010JA015373.

Kovitz, A. A., and D. Mintzer (1966), Structure of a Strong Shock Wave as Approximated by a Collisionless Shock with Polynomial Corrections, *Phys. Fluids*, *9*, 2123–2135, doi:10.1063/1.1761583.

Krall, N. A., and P. C. Liewer (1971), Low-Frequency Instabilities in Magnetic Pulses, *Phys. Rev. A*, *4*, 2094–2103, doi:10.1103/PhysRevA.4.2094.

Krämer, M., N. Sollich, and J. Dietrich (1988), Anomalous transport and anomalous heating due to lower-hybrid wave fields, *J. Plasma Phys.*, *39*, 447–+, doi:10.1017/S0022377800026751.

Krasnoselskikh, V. V., E. N. Kruchina, A. S. Volokitin, and G. Thejappa (1985), Fast electron generation in quasiperpendicular shocks and type II solar radiobursts, *Astronomy and Astrophys.*, *149*, 323–329.

Krasnosel'Skikh, V. V., T. Vinogradova, M. A. Balikhin, H. S. C. Alleyne, A. K. Pardaens, L. J. C. Woolliscroft, S. I. Klimov, A. Petrukovich, W. A. C. Mier-Jedrzejowicz, and D. J. Southwood (1991), On the nature of low frequency turbulence in the foot of strong quasi-perpendicular shocks, *Adv. Space Res.*, *11*, 15–18, doi:10.1016/0273-1177(91)90002-2.

Krasnoselskikh, V. V., B. Lembège, P. Savoini, and V. V. Lobzin (2002), Nonstationarity of strong collisionless quasiperpendicular shocks: Theory and full particle numerical simulations, *Phys. Plasmas*, *9*, 1192–1209, doi:10.1063/1.1457465.

Krasnoselskikh, V. V., V. V. Lobzin, K. Musatenko, J. Soucek, J. S. Pickett, and I. H. Cairns (2007), Beam-plasma interaction in randomly inhomogeneous plasmas and statistical properties of small-amplitude Langmuir waves in the solar wind and electron foreshock, *J. Geophys. Res.*, *112*, 10,109–+, doi:10.1029/2006JA012212.

Krasnosselskikh, V., M. Balikhin, M. Gedalin, and B. Lembège (1995), Electron dynamics in the front of the quasi-perpendicular shocks, *Adv. Space Res.*, *15*, 239–245, doi:10.1016/0273-1177(94)00104-9.

Krauss-Varban, D., and N. Omidi (1991), Structure of medium Mach number quasi-parallel shocks - Upstream and downstream waves, *J. Geophys. Res.*, *96*, 17,715–+, doi:10.1029/91JA01545.

Krauss-Varban, D., F. G. E. Pantellini, and D. Burgess (1995), Electron dynamics and whistler waves at quasiperpendicular shocks, *Geophys. Res. Lett.*, *22*, 2091–2094, doi:10.1029/95GL01782.

Krems, M., J. Zirbel, M. Thomason, and R. D. Dubois (2005), Channel electron multiplier and channelplate efficiencies for detecting positive ions, *Rev. Sci. Inst.*, *76*, 093,305–+, doi:10.1063/1.2052052.

Kruchina, E. N., R. Z. Sagdeev, and V. D. Shapiro (1980), Strong Langmuir turbulence as a source of radio emission, *ZhETF Pis ma Redaktsiiu*, *32*, 443–447.

Kucharek, H. (2008), On the physics of collisionless shocks: Cluster investigations and simulations, *Journal of Atmospheric and Solar-Terrestrial Physics*, *70*, 316–324, doi:10.1016/j.jastp.2007.08.052.

Kucharek, H., and E. Möbius (2005), Ion Dynamics at Shocks: Ion Reflection and Beam Formation at Quasi-perpendicular Shocks, in *The Physics of Collisionless Shocks: 4th Annual IGPP International Astrophysics Conference*, *American Institute of Physics Conference Series*, vol. 781, edited by G. Li, G. P. Zank, & C. T. Russell, pp. 32–36, doi:10.1063/1.2032671.

Kucharek, H., E. Möbius, M. Scholer, C. Mouikis, L. Kistler, T. Horbury, A. Balogh, H. Réme, and J. Bosqued (2004), On the origin of field-aligned beams at the quasi-perpendicular bow shock: multi-spacecraft observations by Cluster, *Ann. Geophys.*, *22*, 2301–2308.

Kuley, A., and V. K. Tripathi (2009), Stabilization of ion temperature gradient driven modes by lower hybrid wave in a tokamak, *Phys. Plasmas*, *16*(3), 032,504–+, doi:10.1063/1.3080744.

Kulsrud, R., H. Ji, W. Fox, and M. Yamada (2005), An electromagnetic drift instability in the magnetic reconnection experiment and its importance for magnetic reconnection, *Phys. Plasmas*, *12*, 082,301–+, doi:10.1063/1.1949225.

Kumagai, H., K. Hashimoto, I. Kimura, and H. Matsumoto (1980), Computer simulation of a Cerenkov interaction between obliquely propagating whistler mode waves and an electron beam, *Phys. Fluids*, *23*, 184–193, doi:10.1063/1.862837.

Kumar, A., and V. K. Tripathi (2006), Bernstein mode coupling to cyclotron harmonic radiation in a plasma, *Phys. Plasmas*, *13*, 052,302–+, doi:10.1063/1.2179007.

Kumar, P., and V. K. Tripathi (2008), Parametric conversion of a lower hybrid wave into a whistler in a plasma, *Phys. Plasmas*, *15*(5), 052,107–+, doi:10.1063/1.2918343.

Kuncic, Z., I. H. Cairns, and S. Knock (2002), Analytic model for the electrostatic potential jump across collisionless shocks, with application to Earth's bow shock, *J. Geophys. Res.*, *107*, 1218–+, doi:10.1029/2001JA000250.

Kurth, W. S. (1992), Comparative observations of plasma waves at the outer planets, *Adv. Space Res.*, *12*, 83–90, doi:10.1016/0273-1177(92)90380-G.

Kurth, W. S., D. A. Gurnett, and F. L. Scarf (1979), High-resolution spectrograms of ion acoustic waves in the solar wind, *J. Geophys. Res.*, *84*, 3413–3419, doi:10.1029/JA084iA07p03413.

Kurth, W. S., D. D. Barbosa, D. A. Gurnett, and F. L. Scarf (1980a), Electrostatic waves in the Jovian magnetosphere, *Geophys. Res. Lett.*, *7*, 57–60, doi:10.1029/GL007i001p00057.

Kurth, W. S., L. A. Frank, D. A. Gurnett, B. G. Burek, and M. Ashour-Abdalla (1980b), Observations of a free-energy source for intense electrostatic waves, *Geophys. Res. Lett.*, *7*, 293–296, doi:10.1029/GL007i005p00293.

Kurth, W. S., D. A. Gurnett, F. L. Scarf, and D. D. Barbosa (1983), A survey of electrostatic waves in Saturn's magnetosphere, *J. Geophys. Res.*, *88*, 8959–8970, doi:10.1029/JA088iA11p08959.

Kurth, W. S., G. B. Hospodarsky, D. A. Gurnett, M. L. Kaiser, J. Wahlund, A. Roux, P. Canu, P. Zarka, and Y. Tokarev (2001), An overview of observations by the Cassini radio and plasma wave investigation at earth, *J. Geophys. Res.*, *106*, 30,239–30,252, doi:10.1029/2001JA900033.

Labelle, J., and R. A. Treumann (1988a), Plasma waves at the dayside magnetopause, *Space Sci. Rev.*, *47*, 175–202, doi:10.1007/BF00223240.

Labelle, J., and R. A. Treumann (1988b), Current-driven lower hybrid waves at the inner edge of the ring current, *J. Geophys. Res.*, *93*, 2591–2598, doi:10.1029/JA093iA04p02591.

LaBelle, J., and R. A. Treumann (2002), Auroral Radio Emissions, 1. Hisses, Roars, and Bursts, *Space Sci. Rev.*, *101*, 295–440.

Labelle, J., R. A. Treumann, W. Baumjohann, G. Haerendel, and N. Sckopke (1988), The duskside plasmapause/ring current interface - Convection and plasma wave observations, *J. Geophys. Res.*, *93*, 2573–2590, doi:10.1029/JA093iA04p02573.

Lacombe, C., A. A. Samsonov, A. Mangeney, M. Maksimovic, N. Cornilleau-Wehrlin, C. C. Harvey, J. Bosqued, and P. Trávn´ıček (2006), Cluster observations in the magnetosheath - Part 2: Intensity of the turbulence at electron scales, *Ann. Geophys.*, *24*, 3523–3531.

Ladislas Wiza, J. (1979), Microchannel plate detectors, *Nucl. Inst. & Meth.*, *162*, 587–601, doi:10.1016/0029-554X(79)90734-1.

Lakhina, G. S. (1985), Electromagnetic lower hybrid instability in the solar wind, *Astrophys. Space Sci.*, *111*, 325–334, doi:10.1007/BF00649972.

Lakhina, G. S., and B. Buti (1996), Stochastic Acceleration by Lower Hybrid Waves in the Solar Corona, *Solar Phys.*, *165*, 329–336, doi:10.1007/BF00149717.

Laming, J. M. (2001a), Accelerated Electrons in Cassiopeia A: An Explanation for the Hard X-Ray Tail, *Astrophys. J.*, *546*, 1149–1158, doi:10.1086/318317.

Laming, J. M. (2001b), Accelerated Electrons in Cassiopeia A: Thermal and Electromagnetic Effects, *Astrophys. J.*, *563*, 828–841, doi:10.1086/323953.

Lampe, M., W. M. Manheimer, J. B. McBride, J. H. Orens, R. Shanny, and R. N. Sudan (1971a), Nonlinear Development of the Beam-Cyclotron Instability, *Phys. Rev. Lett.*, *26*, 1221–1225, doi:10.1103/PhysRevLett.26.1221.

Lampe, M., J. B. McBride, J. H. Orens, and R. N. Sudan (1971b), On the theory of the beam cyclotron instability in plasmas, *Phys. Lett. A*, *35*, 129–130, doi:10.1016/0375-9601(71)90583-4.

Lampe, M., W. M. Manheimer, J. B. McBride, J. H. Orens, K. Papadopoulos, R. Shanny, and R. N. Sudan (1972a), Theory and Simulation of the Beam Cyclotron Instability, *Phys. Fluids*, *15*, 662–675, doi:10.1063/1.1693961.

Lampe, M., W. M. Manheimer, J. B. McBride, and J. H. Orens (1972b), Anomalous Resistance due to Cross-Field Electron-Ion Streaming Instabilities, *Phys. Fluids*, *15*, 2356–2362, doi:10.1063/1.1693879.

Lampton, M., O. Siegmund, and R. Raffanti (1987), Delay line anodes for microchannel-plate spectrometers, *Rev. Sci. Inst.*, *58*, 2298–2305, doi:10.1063/1.1139341.

Landau, L. D. (1946), On the vibration of the electron plasma, *J. Phys. (USSR)*, *X (1)*, 85–94.

Lang, K. R. (2000a), *The Sun From Space*, Astronomy and Astrophysics Library, Springer, Verlag Berlin, Germany.

Lang, K. R. (2000b), The Sun From Space, *Astrophys. Space Sci.*, *273*, 1–6.

Lapenta, G., J. U. Brackbill, and W. S. Daughton (2003), The unexpected role of the lower hybrid drift instability in magnetic reconnection in three dimensions, *Phys. Plasmas*, *10*, 1577–1587, doi:10.1063/1.1560615.

Larson, D. E., R. P. Lin, J. P. McFadden, R. E. Ergun, C. W. Carlson, K. A. Anderson, T. D. Phan, M. P. McCarthy, G. K. Parks, H. Rème, J. M. Bosqued, C. d'Uston, T. R. Sanderson, K.-P. Wenzel, and R. P. Lepping (1996), Probing the Earth's bow shock with upstream electrons, *Geophys. Res. Lett.*, *23*, 2203–2206, doi:10.1029/96GL02382.

Larson, D. E., R. P. Lin, J. M. McTiernan, J. P. McFadden, R. E. Ergun, M. McCarthy, H. Rème, T. R. Sanderson, M. Kaiser, R. P. Lepping, and J. Mazur (1997), Tracing the topology of the October 18-20, 1995, magnetic cloud with ˜0.1-100 keV electrons, *Geophys. Res. Lett.*, *24*, 1911–1914, doi:10.1029/97GL01878.

Lashmore-Davies, C., and T. Martin (1973), Electrostatic instabilities driven by an electric current perpendicular to a magnetic field, *Nucl. Fusion*, *13*, 193.

Lau, K.-M., and H. Weng (1995), Climate Signal Detection Using Wavelet Transform: How to Make a Time Series Sing., *Bull. Amer. Meteor. Soc.*, *76*, 2391–2402, doi:10.1175/1520-0477(1995)076.

Lauben, D. S., U. S. Inan, T. F. Bell, and D. A. Gurnett (2002), Source characteristics of ELF/VLF chorus, *J. Geophys. Res.*, *107*, 1429–+, doi:10.1029/2000JA003019.

Lavergnat, J., D. Le Queau, R. Pellat, and A. Roux (1982), Nonlinear radiation by an electron beam in the whistler range - A tentative theoretical model, *Phys. Fluids*, *25*, 1073–1082, doi:10.1063/1.863840.

Lavraud, B., A. Opitz, J. T. Gosling, A. P. Rouillard, K. Meziane, J. Sauvaud, A. Fedorov, I. Dandouras, V. Génot, C. Jacquey, P. Louarn, C. Mazelle, E. Penou, D. E. Larson, J. G. Luhmann, P. Schroeder, L. Jian, C. T. Russell, C. Foullon, R. M. Skoug, J. T. Steinberg, K. D. Simunac, and A. B. Galvin (2010), Statistics of counter-streaming solar wind suprathermal electrons at solar minimum: STEREO observations, *Ann. Geophys.*, *28*, 233–246.

Lazar, M., and S. Poedts (2009), Limits for the Firehose Instability in Space Plasmas, *Solar Phys.*, *258*, 119–128, doi:10.1007/s11207-009-9405-y.

Lazar, M., R. Schlickeiser, and S. Poedts (2009), On the existence of Weibel instability in a magnetized plasma. I. Parallel wave propagation, *Phys. Plasmas*, *16*, 012,106–+, doi:10.1063/1.3072976.

Lazar, M., S. Poedts, and R. Schlickeiser (2010), Nonresonant electromagnetic instabilities in space plasmas: interplay of Weibel and firehose instabilities, *Twelfth International Solar Wind Conference*, *1216*, 280–283, doi:10.1063/1.3395855.

Lazar, M., S. Poedts, and R. Schlickeiser (2011), Instability of the parallel electromagnetic modes in Kappa distributed plasmas - I. Electron whistler-cyclotron modes, *Mon. Not. Roy. Astron. Soc.*, *410*, 663–670, doi:10.1111/j.1365-2966.2010.17472.x.

Lazaré, M., and S. Poedtsé (2009), Firehose instability in space plasmas with bi-kappa distributions, *Astron. & Astrophys.*, *494*, 311–315, doi:10.1051/0004-6361:200811109.

Le, G., C. T. Russell, and E. J. Smith (1989), Discrete wave packets upstream from the earth and comets, *J. Geophys. Res.*, *94*, 3755–3760, doi:10.1029/JA094iA04p03755.

Le Contel, O., A. Roux, P. Robert, C. Coillot, A. Bouabdellah, B. de La Porte, D. Alison, S. Ruocco, V. Angelopoulos, K. Bromund, C. C. Chaston, C. Cully, H. U. Auster, K. H. Glassmeier, W. Baumjohann, C. W. Carlson, J. P. McFadden, and D. Larson (2008), First Results of the THEMIS Search Coil Magnetometers, *Space Sci. Rev.*, *141*, 509–534, doi:10.1007/s11214-008-9371-y.

Le Contel, O., A. Roux, C. Jacquey, P. Robert, M. Berthomier, T. Chust, B. Grison, V. Angelopoulos, D. Sibeck, C. C. Chaston, C. M. Cully, B. Ergun, K. Glassmeier, U. Auster, J. McFadden, C. Carlson, D. Larson, J. W. Bonnell, S. Mende, C. T. Russell, E. Donovan, I. Mann, and H. Singer (2009), Quasi-parallel whistler mode waves observed by THEMIS during near-earth dipolarizations, *Ann. Geophys.*, *27*, 2259–2275.

Le Queau, D., and A. Roux (1987a), Electron acceleration within coronal loops - A wave-particle process?, *Solar Phys.*, *111*, 19–22, doi:10.1007/BF00145436.

Le Queau, D., and A. Roux (1987b), Quasi-monochromatic wave-particle interactions in magnetospheric plasmas, *Solar Phys.*, *111*, 59–80, doi:10.1007/BF00145441.

LeDocq, M. J., D. A. Gurnett, and G. B. Hospodarsky (1998), Chorus Source Locations from VLF Poynting Flux Measurements with the Polar Spacecraft, *Geophys. Res. Lett.*, *25*, 4063–+, doi:10.1029/1998GL900071.

Lee, E., G. K. Parks, M. Wilber, and N. Lin (2009), Nonlinear Development of Shocklike Structure in the Solar Wind, *Phys. Rev. Lett.*, *103*, 031,101–+, doi:10.1103/PhysRevLett.103.031101.

Lee, K. F. (1971), Dispersion Characteristics of Electromagnetic Cyclotron Harmonic Waves in Warm Plasmas, *J. App. Phys.*, *42*, 5418–5421, doi:10.1063/1.1659959.

Lee, K. F. (1972), Instability of Electromagnetic Cyclotron Harmonic Waves in Plasmas, *Phys. Rev. A*, *6*, 355–363, doi:10.1103/PhysRevA.6.355.

Lee, K. F. (1980), Instability of lower-hybrid waves in collisional plasmas with a field-aligned current, *J. Plasma Phys.*, *23*, 249–257, doi:10.1017/S0022377800022297.

Lee, M. A. (1982), Coupled hydromagnetic wave excitation and ion acceleration upstream of the earth's bow shock, *J. Geophys. Res.*, *87*, 5063–5080, doi:10.1029/JA087iA07p05063.

Lee, M. A., and S. P. Gary (1991), Quasi-linear evolution of ULF waves excited by cometary ion pickup, *J. Geophys. Res.*, *96*, 21,319–+, doi:10.1029/91JA01864.

Lee, M. A., V. D. Shapiro, and R. Z. Sagdeev (1996), Pickup ion energization by shock surfing, *J. Geophys. Res.*, *101*, 4777–4790, doi:10.1029/95JA03570.

Lee, R. E., S. C. Chapman, and R. O. Dendy (2004), Numerical Simulations of Local Shock Reformation and Ion Acceleration in Supernova Remnants, *Astrophys. J.*, *604*, 187–195, doi:10.1086/381881.

Lee, R. E., S. C. Chapman, and R. O. Dendy (2005a), Ion acceleration processes at reforming collisionless shocks, *Phys. Plasmas*, *12*, 012,901–+, doi:10.1063/1.1812536.

Lee, R. E., S. C. Chapman, and R. O. Dendy (2005b), Reforming perpendicular shocks in the presence of pickup protons: initial ion acceleration, *Ann. Geophys.*, *23*, 643–650.

Lefebvre, B., S. J. Schwartz, A. F. Fazakerley, and P. Décréau (2007), Electron dynamics and cross-shock potential at the quasi-perpendicular Earth's bow shock, *J. Geophys. Res.*, *112*, 9212–+, doi:10.1029/2007JA012277.

Lefebvre, B., Y. Seki, S. J. Schwartz, C. Mazelle, and E. A. Lucek (2009), Reformation of an oblique shock observed by Cluster, *J. Geophys. Res.*, *114*, 11,107–+, doi:10.1029/2009JA014268.

Lefeuvre, F., and R. A. Helliwell (1985), Characterization of the sources of VLF hiss and chorus observed on Geos 1, *J. Geophys. Res.*, *90*, 6419–6438, doi:10.1029/JA090iA07p06419.

Lehtinen, N. G., T. F. Bell, V. P. Pasko, and U. S. Inan (1997), A two-dimensional model of runaway electron beams driven by quasi-electrostatic thundercloud fields, *Geophys. Res. Lett.*, *24*, 2639–2642, doi:10.1029/97GL52738.

Lembège, B. (1980a), Cyclotron harmonic waves detected in the direction parallel to the magnetostatic field, *Phys. Fluids*, *23*, 2128–2133, doi:10.1063/1.862898.

Lembège, B. (1980b), Theoretical study of backward propagating cyclotron harmonic waves for frequencies omega around omega /CYL/, *Plasma Phys.*, *22*, 991–1001, doi:10.1088/0032-1028/22//004.

Lembège, B. (1983), Perpendicular distribution of electrostatic electron-cyclotron radiation under dense plasma conditions, *Phys. Fluids*, *26*, 1780–1788, doi:10.1063/1.864352.

Lembège, B. (1984), Perpendicular distribution of electrostatic electron cyclotron radiation under low-density plasma conditions, *Phys. Fluids*, *27*, 412–426, doi:10.1063/1.864636.

Lembège, B., and J. M. Dawson (1984), Plasma heating and acceleration by strong magnetosonic waves propagating obliquely to a magnetostatic field, *Phys. Rev. Lett.*, *53*, 1053–1056, doi:10.1103/PhysRevLett.53.1053.

Lembège, B., and J. M. Dawson (1987), Plasma heating through a supercritical oblique collisionless shock, *Phys. Fluids*, *30*, 1110–1114, doi:10.1063/1.866309.

Lembège, B., and J. M. Dawson (1989a), Relativistic particle dynamics in a steepening magnetosonic wave., *Phys. Fluids B*, *1*, 1001–1010, doi:10.1063/1.859021.

Lembège, B., and J. M. Dawson (1989b), Formation of double layers within an oblique collisionless shock, *Phys. Rev. Lett.*, *62*, 2683–2686, doi:10.1103/PhysRevLett.62.2683.

Lembège, B., and P. Savoini (1992), Nonstationarity of a two-dimensional quasiperpendicular supercritical collisionless shock by self-reformation, *Phys. Fluids B*, *4*, 3533–3548, doi:10.1063/1.860361.

Lembège, B., and P. Savoini (2002), Formation of reflected electron bursts by the nonstationarity and nonuniformity of a collisionless shock front, *J. Geophys. Res.*, *107*, 1037–+, doi:10.1029/2001JA900128.

Lembège, B., P. Savoini, M. Balikhin, S. Walker, and V. Krasnoselskikh (2003), Demagnetization of transmitted electrons through a quasi-perpendicular collisionless shock, *J. Geophys. Res.*, *108*, 1256–+, doi:10.1029/2002JA009288.

Lembège, B., J. Giacalone, M. Scholer, T. Hada, M. Hoshino, V. Krasnoselskikh, H. Kucharek, P. Savoini, and T. Terasawa (2004), Selected Problems in Collisionless-Shock Physics, *Space Sci. Rev.*, *110*, 161–226, doi:10.1023/B:SPAC.0000023372.12232.b7.

Lembège, B., Z. Huang, P. Martel, and D. Cai (2008), Analysis of Collisionless Shock Turbulence by Using Virtual Satellites in 2-D Full Particle-in-Cell Simulations, *IEEE Transactions on Plasma Science*, *36*, 1172–1173, doi:10.1109/TPS.2008.927096.

Lembège, B., P. Savoini, P. Hellinger, and P. M. Trávníček (2009), Nonstationarity of a two-dimensional perpendicular shock: Competing mechanisms, *J. Geophys. Res.*, *114*, 3217–+, doi:10.1029/2008JA013618.

Lemons, D. S., and S. P. Gary (1977), Electromagnetic effects on the modified two-stream instability, *J. Geophys. Res.*, *82*, 2337–2342, doi:10.1029/JA082i016p02337.

Lemons, D. S., and S. P. Gary (1978), Current-driven instabilities in a laminar perpendicular shock, *J. Geophys. Res.*, *83*, 1625–1632, doi:10.1029/JA083iA04p01625.

Lemons, D. S., J. R. Asbridge, S. J. Bame, W. C. Feldman, S. P. Gary, and J. T. Gosling (1979), The source of electrostatic fluctuations in the solar-wind, *J. Geophys. Res.*, *84*, 2135–2138, doi:10.1029/JA084iA05p02135.

Lengyel-Frey, D., W. M. Farrell, R. G. Stone, A. Balogh, and R. Forsyth (1994), An analysis of whistler waves at interplanetary shocks, *J. Geophys. Res.*, *99*, 13,325–+, doi:10.1029/94JA00781.

Lengyel-Frey, D., R. A. Hess, R. J. MacDowall, R. G. Stone, N. Lin, A. Balogh, and R. Forsyth (1996), Ulysses observations of whistler waves at interplanetary shocks and in the solar wind, *J. Geophys. Res.*, *101*, 27,555–27,564, doi:10.1029/96JA00548.

Lepping, R. P., and K. W. Behannon (1980), Magnetic field directional discontinuities. I - Minimum variance errors, *J. Geophys. Res.*, *85*, 4695–4703, doi:10.1029/JA085iA09p04695.

Lepping, R. P., M. H. Acũna, L. F. Burlaga, W. M. Farrell, J. A. Slavin, K. H. Schatten, F. Mariani, N. F. Ness, F. M. Neubauer, Y. C. Whang, J. B. Byrnes, R. S. Kennon, P. V. Panetta, J. Scheifele, and E. M. Worley (1995), The Wind Magnetic Field Investigation, *Space Sci. Rev.*, *71*, 207–229, doi:10.1007/BF00751330.

Leroy, M. M. (1983), Structure of perpendicular shocks in collisionless plasma, *Phys. Fluids*, *26*, 2742–2753, doi:10.1063/1.864468.

Leroy, M. M., D. Winske, C. C. Goodrich, C. S. Wu, and K. Papadopoulos (1982), The structure of perpendicular bow shocks, *J. Geophys. Res.*, *87*, 5081–5094, doi:10.1029/JA087iA07p05081.

Leubner, M. P. (2000), Wave induced suprathermal tail generation of electron velocity space distributions, *Planet. Space Sci.*, *48*, 133–141, doi:10.1016/S0032-0633(99)00091-4.

Leubner, M. P. (2004), Fundamental issues on kappa-distributions in space plasmas and interplanetary proton distributions, *Phys. Plasmas*, *11*, 1308–1316, doi:10.1063/1.1667501.

Lever, E. L., K. B. Quest, and V. D. Shapiro (2001), Shock surfing vs. shock drift acceleration, *Geophys. Res. Lett.*, *28*, 1367–1370, doi:10.1029/2000GL012516.

Leyser, T. B., B. Thidé, M. Waldenvik, S. Goodman, V. L. Frolov, S. M. Grach, A. N. Karashtin, G. P. Komrakov, and D. S. Kotik (1993), Spectral structure of stimulated electromagnetic emissions between electron cyclotron harmonics, *J. Geophys. Res.*, *98*, 17,597–17,606, doi:10.1029/93JA01387.

Li, W., R. M. Thorne, N. P. Meredith, R. B. Horne, J. Bortnik, Y. Y. Shprits, and B. Ni (2008), Evaluation of whistler mode chorus amplification during an injection event observed on CRRES, *J. Geophys. Res.*, *113*, 9210–+, doi:10.1029/2008JA013129.

Li, W., R. M. Thorne, V. Angelopoulos, J. Bortnik, C. M. Cully, B. Ni, O. LeContel, A. Roux, U. Auster, and W. Magnes (2009), Global distribution of whistler-mode chorus waves observed on the THEMIS spacecraft, *Geophys. Res. Lett.*, *36*, 9104–+, doi:10.1029/2009GL037595.

Li, W., R. M. Thorne, Y. Nishimura, J. Bortnik, V. Angelopoulos, J. P. McFadden, D. E. Larson, J. W. Bonnell, O. LeContel, A. Roux, and U. Auster (2010), THEMIS analysis of observed equatorial electron distributions responsible for the chorus excitation, *J. Geophys. Res.*, *115*, A00F11, doi:10.1029/2009JA014845.

Li, X., and S. R. Habbal (1999), Ion cyclotron waves, instabilities and solar wind heating, *Solar Phys.*, *190*, 485–497, doi:10.1023/A:1005288832535.

Li, X., and S. R. Habbal (2000), Electron kinetic firehose instability, *J. Geophys. Res.*, *105*, 27,377–27,386, doi:10.1029/2000JA000063.

Lin, N., P. J. Kellogg, R. J. MacDowall, A. Balogh, R. J. Forsyth, J. L. Phillips, A. Buttighoffer, and M. Pick (1995a), Observations of plasma waves in magnetic holes, *Geophys. Res. Lett.*, *22*, 3417–3420, doi:10.1029/95GL03266.

Lin, N., P. J. Kellogg, R. J. MacDowall, B. T. Tsurutani, and C. M. Ho (1996a), Langmuir waves associated with discontinuities in the solar wind: a statistical study., *Astron. & Astrophys.*, *316*, 425–429.

Lin, N., P. J. Kellogg, R. J. MacDowall, E. E. Scime, A. Balogh, R. J. Forsyth, D. J. McComas, and J. L. Phillips (1998), Very low frequency waves in the heliosphere: Ulysses observations, *J. Geophys. Res.*, *103*, 12,023–12,036, doi:10.1029/98JA00764.

Lin, N., P. J. Kellogg, K. A. Goetz, S. J. Monson, and R. J. MacDowall (1999), Plasma Waves in Coronal Mass Ejections: ULYSSES Observations, in *American Institute of Physics Conference Series*, *American Institute of Physics Conference Series*, vol. 471, edited by S. T. Suess, G. A. Gary, and S. F. Nerney, pp. 673–+, doi:10.1063/1.58821.

Lin, N., P. J. Kellogg, R. J. MacDowall, and S. P. Gary (2001a), Ion Acoustic Waves in the Heliosphere, *Space Sci. Rev.*, *97*, 193–196, doi:10.1023/A:1011823505395.

Lin, R. P. (1998), WIND Observations of Suprathermal Electrons in the Interplanetary Medium, *Space Sci. Rev.*, *86*, 61–78, doi:10.1023/A:1005048428480.

Lin, R. P., K. A. Anderson, S. Ashford, C. Carlson, D. Curtis, R. Ergun, D. Larson, J. McFadden, M. McCarthy, G. K. Parks, H. Rème, J. M. Bosqued, J. Coutelier, F. Cotin, C. D'Uston, K.-P. Wenzel, T. R. Sanderson, J. Henrion, J. C. Ronnet, and G. Paschmann (1995b), A Three-Dimensional Plasma and Energetic Particle Investigation for the Wind Spacecraft, *Space Sci. Rev.*, *71*, 125–153, doi:10.1007/BF00751328.

Lin, R. P., D. Larson, J. McFadden, C. W. Carlson, R. E. Ergun, K. A. Anderson, S. Ashford, M. McCarthy, G. K. Parks, H. Rème, J. M. Bosqued, C. d'Uston, T. R. Sanderson, and K. P. Wenzel (1996b), Observation of an impulsive solar electron event extending down to ˜0.5 keV energy, *Geophys. Res. Lett.*, *23*, 1211–1214, doi:10.1029/96GL00710.

Lin, R. P., G. Hurford, S. Krucker, and S. Bale (2001b), High energy particle acceleration by solar flares and fast coronal mass ejections, in *Solar encounter. Proceedings of the First Solar Orbiter Workshop*, *ESA Special Publication*, vol. 493, edited by B. Battrick, H. Sawaya-Lacoste, E. Marsch, V. Martinez Pillet, B. Fleck, and R. Marsden, pp. 275–278.

Lipatov, A. S., and G. P. Zank (1999), Pickup Ion Acceleration at Low- β_p Perpendicular Shocks, *Phys. Rev. Lett.*, *82*, 3609–3612, doi:10.1103/PhysRevLett.82.3609.

Lipatov, A. S., E. C. Sittler, Jr., R. E. Hartle, and J. F. Cooper (2012), Short wavelength electromagnetic perturbations excited near the Solar Probe Plus spacecraft in the inner heliosphere: 2.5D hybrid modeling, *Planet. Space Sci.*, *62*, 61–68, doi:10.1016/j.pss.2011.12.008.

Liu, Y., J. D. Richardson, and J. W. Belcher (2005), A statistical study of the properties of interplanetary coronal mass ejections from 0.3 to 5.4 AU, *Planet. Space Sci.*, *53*, 3–17, doi:10.1016/j.pss.2004.09.023.

Livesey, W. A., C. F. Kennel, and C. T. Russell (1982), ISEE-1 and -2 observations of magnetic field strength overshoots in quasi-perpendicular bow shocks, *Geophys. Res. Lett.*, *9*, 1037–1040, doi:10.1029/GL009i009p01037.

Livesey, W. A., C. T. Russell, and C. F. Kennel (1984), A comparison of specularly reflected gyrating ion orbits with observed shock foot thicknesses, *J. Geophys. Res.*, *89*, 6824–6828, doi:10.1029/JA089iA08p06824.

Lobzin, V. V., V. V. Krasnoselskikh, J. Bosqued, J. Pinçon, S. J. Schwartz, and M. Dunlop (2007), Nonstationarity and reformation of high-Mach-number quasiperpendicular shocks: Cluster observations, *Geophys. Res. Lett.*, *34*, 5107–+, doi:10.1029/2006GL029095.

Lobzin, V. V., V. V. Krasnoselskikh, K. Musatenko, and T. Dudok de Wit (2008), On nonstationarity and rippling of the quasiperpendicular zone of the Earth bow shock: Cluster observations, *Ann. Geophys.*, *26*, 2899–2910, doi:10.5194/angeo-26-2899-2008.

Lorentzen, K. R., J. B. Blake, U. S. Inan, and J. Bortnik (2001), Observations of relativistic electron microbursts in association with VLF chorus, *J. Geophys. Res.*, *106*, 6017–6028, doi:10.1029/2000JA003018.

Lu, Q. M., B. Lembège, J. B. Tao, and S. Wang (2008), Perpendicular electric field in two-dimensional electron phase-holes: A parameter study, *J. Geophys. Res.*, *113*, 11,219–+, doi:10.1029/2008JA013693.

Lu, Q. M., Z. W. Yang, B. Lembège, and S. Wang (2009), Ion Acceleration in Non-Stationary Shocks, in *American Institute of Physics Conference Series*, *American Institute of Physics Conference Series*, vol. 1183, edited by X. Ao & G. Z. R. Burrows, pp. 39–46, doi:10.1063/1.3266782.

Lucas, C., and N. Brice (1973), Cyclotron Resonance Wave Amplification in the Magnetosphere and Energetic Particle Stability, *J. Geophys. Res.*, *78*, 8338–8344, doi:10.1029/JA078i034p08338.

Lucek, E., T. Horbury, A. Balogh, I. Dandouras, and H. Rème (2004), Cluster observations of structures at quasi-parallel bow shocks, *Ann. Geophys.*, *22*, 2309–2313.

Lucek, E. A., and A. Balogh (1997), Ulysses observations of a discrete wavepacket upstream of an interplanetary shock, *Geophys. Res. Lett.*, *24*, 2387–2390, doi:10.1029/97GL52471.

Lucek, E. A., and A. Balogh (1998), Analysis of the waves associated with the unusual interplanetary shock observed on day 109, 1992, *J. Geophys. Res.*, *103*, 29,633–29,642, doi:10.1029/98JA02538.

Lucek, E. A., T. S. Horbury, M. W. Dunlop, P. J. Cargill, S. J. Schwartz, A. Balogh, P. Brown, C. Carr, K.-H. Fornacon, and E. Georgescu (2002), Cluster magnetic field observations at a quasi-parallel bow shock, *Ann. Geophys.*, *20*, 1699–1710.

Lucek, E. A., T. S. Horbury, I. Dandouras, and H. Rème (2008), Cluster observations of the Earth's quasi-parallel bow shock, *J. Geophys. Res.*, *113*, 7–+, doi:10.1029/2007JA012756.

Lucke, R. L. (1976), Counting statistics for nonnegligible dead time corrections, *Rev. Sci. Instr.*, *47*, 766–767, doi:10.1063/1.1134733.

Luhmann, J. G., J. T. Gosling, J. T. Hoeksema, and X. Zhao (1998), The relationship between large-scale solar magnetic field evolution and coronal mass ejections, *J. Geophys. Res.*, *103*, 6585–+, doi:10.1029/97JA03727.

Luhmann, J. G., D. W. Curtis, P. Schroeder, J. McCauley, R. P. Lin, D. E. Larson, S. D. Bale, J.-A. Sauvaud, C. Aoustin, R. A. Mewaldt, A. C. Cummings, E. C. Stone, A. J. Davis, W. R. Cook, B. Kecman, M. E. Wiedenbeck, T. von Rosenvinge, M. H. Acuna, L. S. Reichenthal, S. Shuman, K. A. Wortman, D. V. Reames, R. Mueller-Mellin, H. Kunow, G. M. Mason, P. Walpole, A. Korth, T. R. Sanderson, C. T. Russell, and J. T. Gosling (2008), STEREO IMPACT Investigation Goals, Measurements, and Data Products Overview, *Space Sci. Rev.*, *136*, 117–184, doi:10.1007/s11214-007-9170-x.

Luo, Q. Y., F. S. Wei, and X. S. Feng (2003), Electron Acceleration by Lower Hybrid Turbulence in Solar Flares, *Astrophys. J.*, *584*, 497–508, doi:10.1086/345618.

Lutsenko, V. N., and K. Kudela (1999), Almost monoenergetic ions near the Earth's magnetosphere boundaries, *Geophys. Res. Lett.*, *26*, 413–416, doi:10.1029/1999GL900002.

Lye, R. G., and A. J. Dekker (1957), Theory of Secondary Emission, *Phys. Rev.*, *107*, 977–981, doi:10.1103/PhysRev.107.977.

Lynch, B. J., S. K. Antiochos, C. R. DeVore, J. G. Luhmann, and T. H. Zurbuchen (2008), Topological Evolution of a Fast Magnetic Breakout CME in Three Dimensions, *Astrophys. J.*, *683*, 1192–1206, doi:10.1086/589738.

Lyons, L. R. (1974), Electron Diffusion Driven by Magnetospheric Electrostatic Waves, *J. Geophys. Res.*, *79*, 575–580, doi:10.1029/JA079i004p00575.

Lyons, L. R., and R. M. Thorne (1972), Parasitic Pitch Angle Diffusion of Radiation Belt Particles by Ion Cyclotron Waves, *J. Geophys. Res.*, *77*, 5608–5616, doi:10.1029/JA077i028p05608.

Lyons, L. R., R. M. Thorne, and C. F. Kennel (1972), Pitch-angle diffusion of radiation belt electrons within the plasmasphere., *J. Geophys. Res.*, *77*, 3455–3474, doi: 10.1029/JA077i019p03455.

Lyons, L. R., D. Lee, R. M. Thorne, R. B. Horne, and A. J. Smith (2005), Solar wind-magnetosphere coupling leading to relativistic electron energization during high-speed streams, *J. Geophys. Res.*, *110*, 11,202–+, doi:10.1029/2005JA011254.

Lysak, R. L., and Y. Song (2003), Kinetic theory of the Alfvén wave acceleration of auroral electrons, *J. Geophys. Res.*, *108*, 8005, doi:10.1029/2002JA009406.

Ma, J. Z. G., and A. Hirose (2009), High-frequency electrostatic lower-hybrid (LH) waves in magnetic flux tubes, *Physica Scripta*, *79*(3), 035,503–+, doi:10.1088/0031-8949/79/03/035503.

MacDowall, R. J., N. Lin, P. J. Kellogg, A. Balogh, R. J. Forsyth, and M. Neugebauer (1996), Langmuir waves in magnetic holes: source mechanism and consequences., in *American Institute of Physics Conference Series*, *American Institute of Physics Conference Series*, vol. 382, edited by D. Winterhalter, J. T. Gosling, S. R. Habbal, W. S. Kurth, and M. Neugebauer, pp. 301–304, doi:10.1063/1.51486.

Mace, R. L. (1998), Whistler instability enhanced by suprathermal electrons within the Earth's foreshock, *J. Geophys. Res.*, *103*, 14,643–14,654, doi:10.1029/98JA00616.

Mace, R. L. (2004), Generalized electron Bernstein modes in a plasma with a kappa velocity distribution, *Phys. Plasmas*, *11*, 507–522, doi:10.1063/1.1635824.

Mace, R. L., and M. A. Hellberg (1993), Electron-acoustic and cyclotron-sound instabilities driven by field-aligned hot-electron streaming, *J. Geophys. Res.*, *98*, 5881–5891, doi: 10.1029/92JA02900.

Mace, R. L., and R. D. Sydora (2010), Parallel whistler instability in a plasma with an anisotropic bi-kappa distribution, *J. Geophys. Res.*, *115*, 7206, doi:10.1029/2009JA015064.

MacQueen, R. M., A. Csoeke-Poeckh, E. Hildner, L. House, R. Reynolds, A. Stanger, H. Tepoel, and W. Wagner (1980), The High Altitude Observatory Coronagraph/Polarimeter on the Solar Maximum Mission, *Solar Phys.*, *65*, 91–107, doi: 10.1007/BF00151386.

Maksimovic, M., V. Pierrard, and P. Riley (1997), Ulysses electron distributions fitted with Kappa functions, *Geophys. Res. Lett.*, *24*, 1151–1154, doi:10.1029/97GL00992.

Maksimovic, M., S. P. Gary, and R. M. Skoug (2000), Solar wind electron suprathermal strength and temperature gradients: Ulysses observations, *J. Geophys. Res.*, *105*, 18,337–18,350, doi:10.1029/2000JA900039.

Maksimovic, M., S. D. Bale, T. S. Horbury, and M. André (2003), Bow shock motions observed with CLUSTER, *Geophys. Res. Lett.*, *30*(7), 1393, doi:10.1029/2002GL016761.

Malaspina, D. M., and R. E. Ergun (2008), Observations of three-dimensional Langmuir wave structure, *J. Geophys. Res.*, *113*, 12,108–+, doi:10.1029/2008JA013656.

Malaspina, D. M., R. E. Ergun, and I. H. Cairns (2009), Plasma Emission at Shocks by the Eigenmode-Antenna Mechanism, in *American Institute of Physics Conference Series*, *American Institute of Physics Conference Series*, vol. 1183, edited by X. Ao & G. Z. R. Burrows, pp. 131–138, doi: 10.1063/1.3266768.

Malaspina, D. M., I. H. Cairns, and R. E. Ergun (2011), Dependence of Langmuir wave polarization on electron beam speed in type III solar radio bursts, *Geophys. Res. Lett.*, *38*, L13,101, doi:10.1029/2011GL047642.

Malaspina, D. M., D. L. Newman, L. B. Wilson III, K. Goetz, P. J. Kellogg, and K. Kersten (2012a), Electrostatic Solitary Waves in the Solar Wind: Evidence for Instability at Solar Wind Current Sheets, *J. Geophys. Res.*, submitted.

Malaspina, D. M., D. L. Newman, L. B. Wilson III, K. Goetz, P. J. Kellogg, and K. Kersten (2012b), Observations of Electrostatic Solitary Waves as Evidence of Kinetic Instabilities and Magnetic Reconnection at Solar Wind Current Sheets, *AGU Fall Meeting Abstracts*, pp. SM21B–2271, dec. 3-7, San Francisco, CA.

Malkov, M. A., and P. H. Diamond (2009a), Nonlinear Dynamics of Acoustic Instability in a Cosmic Ray Shock Precursor and its Impact on Particle Acceleration, *Astrophys. J.*, *692*, 1571–1581, doi:10.1088/0004-637X/692/2/1571.

Malkov, M. A., and P. H. Diamond (2009b), Wave Dynamics and Particle Acceleration in Shock Precursors, in *American Institute of Physics Conference Series*, *American Institute of Physics Conference Series*, vol. 1183, edited by X. Ao & G. Z. R. Burrows, pp. 66–73, doi:10.1063/1.3266786.

Malmberg, J. H., and C. B. Wharton (1964), Collisionless Damping of Electrostatic Plasma Waves, *Phys. Rev. Lett.*, *13*, 184–186, doi:10.1103/PhysRevLett.13.184.

Malmberg, J. H., and C. B. Wharton (1966), Dispersion of Electron Plasma Waves, *Phys. Rev. Lett.*, *17*, 175–178, doi: 10.1103/PhysRevLett.17.175.

Malmberg, J. H., and C. B. Wharton (1967), Collisionless Damping of Large-Amplitude Plasma Waves, *Phys. Rev. Lett.*, *19*, 775–777, doi:10.1103/PhysRevLett.19.775.

Mangeney, A., C. Salem, C. Lacombe, J.-L. Bougeret, C. Perche, R. Manning, P. J. Kellogg, K. Goetz, S. J. Monson, and J.-M. Bosqued (1999), WIND observations of coherent electrostatic waves in the solar wind, *Ann. Geophys.*, *17*, 307–320, doi:10.1007/s005850050760.

Manheimer, W. M., and R. W. Flynn (1974), Formation of non-thermal ion tails in the ion acoustic instability, *Phys. Fluids*, *17*, 409–415, doi:10.1063/1.1694730.

Mann, G., H. Luehr, and W. Baumjohann (1994), Statistical analysis of short large-amplitude magnetic field structures in the vicinity of the quasi-parallel bow shock, *J. Geophys. Res.*, *99*, 13,315–+, doi:10.1029/94JA00440.

Markovskii, S. A., and J. V. Hollweg (2002), Electron heat flux instabilities in coronal holes: Implications for ion heating, *Geophys. Res. Lett.*, *29*(17), 170,000–1, doi: 10.1029/2002GL015189.

Marsch, E. (2006), Kinetic Physics of the Solar Corona and Solar Wind, *Living Reviews in Solar Physics*, *3*, 1–+.

Marsch, E., and T. Chang (1982), Lower hybrid waves in the solar wind, *Geophys. Res. Lett.*, *9*, 1155–1158, doi: 10.1029/GL009i010p01155.

Marsch, E., and T. Chang (1983), Electromagnetic lower hybrid waves in the solar wind, *J. Geophys. Res.*, *88*, 6869–6880, doi: 10.1029/JA088iA09p06869.

Marsch, E., and A. K. Richter (1984), HELIOS observational constraints on solar wind expansion, *J. Geophys. Res.*, *89*, 6599–6612, doi:10.1029/JA089iA08p06599.

Marsch, E., and A. Roux (1996), Payload requirements for the Solar Probe, *Adv. Space Res.*, *17*, 31–39, doi:10.1016/0273-1177(95)00494-Y.

Marsch, E., and C. Tu (1996), Spatial evolution of the magnetic field spectral exponent in the solar wind: Helios and Ulysses comparison, *J. Geophys. Res.*, *101*, 11,149–11,152, doi:10.1029/95JA03804.

Marsch, E., H. Rosenbauer, R. Schwenn, K. Muehlhaeuser, and F. M. Neubauer (1982a), Solar wind helium ions - Observations of the HELIOS solar probes between 0.3 and 1 AU, *J. Geophys. Res.*, *87*, 35–51, doi:10.1029/JA087iA01p00035.

Marsch, E., R. Schwenn, H. Rosenbauer, K. Muehlhaeuser, W. Pilipp, and F. M. Neubauer (1982b), Solar wind protons - Three-dimensional velocity distributions and derived plasma parameters measured between 0.3 and 1 AU, *J. Geophys. Res.*, *87*, 52–72, doi:10.1029/JA087iA01p00052.

Marsch, E., C. K. Goertz, and K. Richter (1982c), Wave heating and acceleration of solar wind ions by cyclotron resonance, *J. Geophys. Res.*, *87*, 5030–5044, doi:10.1029/JA087iA07p05030.

Marsch, E., K. M. Thieme, H. Rosenbauer, and W. G. Pilipp (1989), Cooling of solar wind electrons inside 0.3 AU, *J. Geophys. Res.*, *94*, 6893–6898, doi:10.1029/JA094iA06p06893.

Martins, S. F., R. A. Fonseca, L. O. Silva, and W. B. Mori (2009), Ion Dynamics and Acceleration in Relativistic Shocks, *Astrophys. J.*, *695*, L189–L193, doi:10.1088/0004-637X/695/2/L189.

Masood, W., and S. J. Schwartz (2008), Observations of the development of electron temperature anisotropies in Earth's magnetosheath, *J. Geophys. Res.*, *113*, 1216–+, doi:10.1029/2007JA012715.

Masood, W., S. J. Schwartz, M. Maksimovic, and A. N. Fazakerley (2006), Electron velocity distribution and lion roars in the magnetosheath, *Ann. Geophys.*, *24*, 1725–1735, doi:10.5194/angeo-24-1725-2006.

Masters, A., H. J. McAndrews, J. T. Steinberg, M. F. Thomsen, C. S. Arridge, M. K. Dougherty, L. Billingham, S. J. Schwartz, N. Sergis, G. B. Hospodarsky, and A. J. Coates (2009), Hot flow anomalies at Saturn's bow shock, *J. Geophys. Res.*, *114*, 8217–+, doi:10.1029/2009JA014112.

Matsui, H., K. Hayashi, S. Kokubun, T. Mukai, T. Yamamoto, K. Tsuruda, Y. Saito, and T. Okada (1997), Long-duration whistler waves in the magnetosheath: Wave characteristics and the possible source region, *J. Geophys. Res.*, *102*, 17,583–17,594, doi:10.1029/97JA01421.

Matsukiyo, S., and T. Hada (2009), Relativistic Particle Acceleration in Developing AlfvÉn Turbulence, *Astrophys. J.*, *692*, 1004–1012, doi:10.1088/0004-637X/692/2/1004.

Matsukiyo, S., and M. Scholer (2003), Modified two-stream instability in the foot of high Mach number quasi-perpendicular shocks, *J. Geophys. Res.*, *108*, 1459–+, doi:10.1029/2003JA010080.

Matsukiyo, S., and M. Scholer (2006a), On reformation of quasi-perpendicular collisionless shocks, *Adv. Space Res.*, *38*, 57–63, doi:10.1016/j.asr.2004.08.012.

Matsukiyo, S., and M. Scholer (2006b), On microinstabilities in the foot of high Mach number perpendicular shocks, *J. Geophys. Res.*, *111*, 6104–+, doi:10.1029/2005JA011409.

Matsukiyo, S., and M. Scholer (2011), Microstructure of the heliospheric termination shock: Full particle electrodynamic simulations, *J. Geophys. Res.*, *116*, A08,106, doi:10.1029/2011JA016563.

Matsukiyo, S., M. Scholer, and D. Burgess (2007), Pickup protons at quasi-perpendicular shocks: full particle electrodynamic simulations, *Ann. Geophys.*, *25*, 283–291.

Matsumoto, H. (1985), Coherent nonlinear effects on electromagnetic wave-particle interactions, *Space Sci. Rev.*, *42*, 429–448, doi:10.1007/BF00214997.

Matsumoto, H., and Y. Omura (1981), Cluster and channel effect phase bunchings by whistler waves in the nonuniform geomagnetic field, *J. Geophys. Res.*, *86*, 779–791, doi:10.1029/JA086iA02p00779.

Matsumoto, H., and H. Usui (1997), Intense bursts of electron cyclotron harmonic waves near the dayside magnetopause observed by GEOTAIL, *Geophys. Res. Lett.*, *24*, 49–52, doi:10.1029/96GL03650.

Matsumoto, H., and Y. Yasuda (1976), Computer simulation of nonlinear interaction between a monochromatic whistler wave and an electron beam, *Phys. Fluids*, *19*, 1513–1522, doi:10.1063/1.861343.

Matsumoto, H., H. Kojima, T. Miyatake, Y. Omura, M. Okada, I. Nagano, and M. Tsutsui (1994), Electrotastic Solitary Waves (ESW) in the magnetotail: BEN wave forms observed by GEOTAIL, *Geophys. Res. Lett.*, *21*, 2915–2918, doi:10.1029/94GL01284.

Matteini, L., S. Landi, P. Hellinger, and M. Velli (2006), Parallel proton fire hose instability in the expanding solar wind: Hybrid simulations, *J. Geophys. Res.*, *111*, A10,101, doi:10.1029/2006JA011667.

Matteini, L., S. Landi, P. Hellinger, F. Pantellini, M. Maksimovic, M. Velli, B. E. Goldstein, and E. Marsch (2007), Evolution of the solar wind proton temperature anisotropy from 0.3 to 2.5 AU, *Geophys. Res. Lett.*, *34*, L20,105, doi:10.1029/2007GL030920.

Matteini, L., S. Landi, M. Velli, and P. Hellinger (2010a), Kinetics of parametric instabilities of Alfvén waves: Evolution of ion distribution functions, *J. Geophys. Res.*, *115*, A09,106, doi:10.1029/2009JA014987.

Matteini, L., S. Landi, L. Del Zanna, M. Velli, and P. Hellinger (2010b), Parametric decay of linearly polarized shear Alfvén waves in oblique propagation: One and two-dimensional hybrid simulations, *Geophys. Res. Lett.*, *37*, L20,101, doi:10.1029/2010GL044806.

Mazelle, C., and F. M. Neubauer (1993), Discrete wave packets at the proton cyclotron frequency at Comet P/Halley, *Geophys. Res. Lett.*, *20*, 153–156, doi:10.1029/92GL02613.

Mazelle, C., D. Le Quéau, and K. Meziane (2000), Nonlinear wave-particle interaction upstream from the Earth's bow shock, *Nonlin. Proc. Geophys.*, *7*, 185–190.

Mazelle, C., K. Meziane, D. Lequéau, M. Wilber, J. P. Eastwood, H. Rème, J. A. Sauvaud, J. M. Bosqued, I. Dandouras, M. McCarthy, L. M. Kistler, B. Klecker, A. Korth, M. B. Bavassano-Cattaneo, G. Pallocchia, R. Lundin, and A. Balogh (2003), Production of gyrating ions from nonlinear wave-particle interaction upstream from the Earth's bow shock: A case study from Cluster-CIS, *Planet. Space Sci.*, *51*, 785–795, doi:10.1016/S0032-0633(03)00107-7.

Mazelle, C., K. Meziane, M. Wilber, and D. Le Quéau (2005), Field-aligned and Gyrating Ion Beams in a Planetary Foreshock, in *The Physics of Collisionless Shocks: 4th Annual IGPP International Astrophysics Conference*, *American Institute of Physics Conference Series*, vol. 781, edited by G. Li, G. P. Zank, and C. T. Russell, pp. 89–94, doi:10.1063/1.2032680.

Mazelle, C., B. Lembège, A. Morgenthaler, K. Meziane, T. S. Horbury, V. Génot, E. A. Lucek, and I. Dandouras (2010), Self-Reformation of the Quasi-Perpendicular Shock: CLUSTER Observations, *Twelfth International Solar Wind Conference*, *1216*, 471–474, doi:10.1063/1.3395905.

McBride, J. B., E. Ott, J. P. Boris, and J. H. Orens (1972), Theory and Simulation of Turbulent Heating by the Modified Two-Stream Instability, *Phys. Fluids*, *15*, 2367–2383, doi:10.1063/1.1693881.

McClements, K. G., R. Bingham, J. J. Su, J. M. Dawson, and D. S. Spicer (1990), Simulation studies of electron acceleration by ion ring distributions in solar flares, *Solar Phys.*, *130*, 229–241, doi:10.1007/BF00156791.

McClements, K. G., R. Bingham, J. J. Su, J. M. Dawson, and D. S. Spicer (1993), Lower hybrid resonance acceleration of electrons and ions in solar flares and the associated microwave emission, *Astrophys. J.*, *409*, 465–475, doi:10.1086/172679.

McClements, K. G., R. O. Dendy, R. Bingham, J. G. Kirk, and L. O. Drury (1997), Acceleration of cosmic ray electrons by ion-excited waves at quasi-perpendicular shocks, *MNRAS*, *291*, 241–249.

McComas, D. J., S. J. Bame, B. L. Barraclough, W. C. Feldman, H. O. Funsten, J. T. Gosling, P. Riley, R. Skoug, A. Balogh, R. Forsyth, B. E. Goldstein, and M. Neugebauer (1998), Ulysses' return to the slow solar wind, *Geophys. Res. Lett.*, *25*, 1–4, doi:10.1029/97GL03444.

McComas, D. J., B. L. Barraclough, H. O. Funsten, J. T. Gosling, E. Santiago-Muñoz, R. M. Skoug, B. E. Goldstein, M. Neugebauer, P. Riley, and A. Balogh (2000), Solar wind observations over Ulysses' first full polar orbit, *J. Geophys. Res.*, *105*, 10,419–10,434, doi:10.1029/1999JA000383.

McFadden, J. P., C. W. Carlson, R. E. Ergun, F. S. Mozer, M. Temerin, W. Peria, D. M. Klumpar, E. G. Shelley, W. K. Peterson, E. Moebius, L. Kistler, R. Elphic, R. Strangeway, C. Cattell, and R. Pfaff (1998a), Spatial structure and gradients of ion beams observed by FAST, *Geophys. Res. Lett.*, *25*, 2021–2024, doi:10.1029/98GL00648.

McFadden, J. P., C. W. Carlson, R. E. Ergun, C. C. Chaston, F. S. Mozer, M. Temerin, D. M. Klumpar, E. G. Shelley, W. K. Peterson, E. Moebius, L. Kistler, R. Elphic, R. Strangeway, C. Cattell, and R. Pfaff (1998b), Electron modulation and ion cyclotron waves observed by FAST, *Geophys. Res. Lett.*, *25*, 2045–2048, doi:10.1029/98GL00855.

McFadden, J. P., D. S. Evans, W. T. Kasprzak, L. H. Brace, D. J. Chornay, A. J. Coates, B. K. Dichter, W. R. Hoegy, E. Holeman, K. Kadinsky-Cade, J. C. Kasper, D. Kataria, L. Kistler, D. Larson, A. J. Lazarus, F. Mozer, T. Mukai, K. W. Ogilvie, G. Paschmann, F. Rich, Y. Saito, J. D. Sudder, J. T. Steinberg, M. Wuest, and P. Wurz (2007), In-Flight Instrument Calibration and Performance Verification, *ISSI Sci. Rep. Ser.*, *7*, 277–385.

McFadden, J. P., C. W. Carlson, D. Larson, M. Ludlam, R. Abiad, B. Elliott, P. Turin, M. Marckwordt, and V. Angelopoulos (2008a), The THEMIS ESA Plasma Instrument and In-flight Calibration, *Space Sci. Rev.*, *141*, 277–302, doi:10.1007/s11214-008-9440-2.

McFadden, J. P., C. W. Carlson, D. Larson, J. Bonnell, F. Mozer, V. Angelopoulos, K.-H. Glassmeier, and U. Auster (2008b), THEMIS ESA First Science Results and Performance Issues, *Space Sci. Rev.*, *141*, 477–508, doi:10.1007/s11214-008-9433-1.

McMillan, B. F., and I. H. Cairns (2006), Lower hybrid turbulence driven by parallel currents and associated electron energization, *Phys. Plasmas*, *13*, 052,104–+, doi:10.1063/1.2198212.

Meeks, C., and P. B. Siegel (2008), Dead time correction via the time series, *Amer. J. Phys.*, *76*, 589–590, doi:10.1119/1.2870432.

Meli, A. (2010), Maximum cosmic ray energies and the shock acceleration mechanism, in *American Institute of Physics Conference Series*, *American Institute of Physics Conference Series*, vol. 1238, edited by H. Susa, M. Arnould, S. Gales, T. Motobayashi, C. Scheidenberger, & H. Utsunomiya, pp. 361–364, doi:10.1063/1.3455967.

Mellott, M. M. (1984), The physical mechanisms of subcritical collisionless shock-wave formation, *Adv. Space Res.*, *4*, 245–253, doi:10.1016/0273-1177(84)90318-1.

Mellott, M. M. (1985), Subcritical collisionless shock waves, in *Collisionless Shocks in the Heliosphere: Reviews of Current Research*, *Geophys. Monogr. Ser.*, vol. 35, edited by B. T. Tsurutani and R. G. Stone, pp. 131–140, AGU, Washington, D.C.

Mellott, M. M., and E. W. Greenstadt (1984), The structure of oblique subcritical bow shocks - ISEE 1 and 2 observations, *J. Geophys. Res.*, *89*, 2151–2161, doi:10.1029/JA089iA04p02151.

Mellott, M. M., and E. W. Greenstadt (1988), Plasma waves in the range of the lower hybrid frequency - ISEE 1 and 2 observations at the earth's bow shock, *J. Geophys. Res.*, *93*, 9695–9708, doi:10.1029/JA093iA09p09695.

Mellott, M. M., and W. A. Livesey (1987), Shock overshoots revisited, *J. Geophys. Res.*, *92*, 13,661–13,665, doi:10.1029/JA092iA12p13661.

Menietti, J. D., J. S. Pickett, D. A. Gurnett, and J. D. Scudder (2001), Electrostatic electron cyclotron waves observed by the plasma wave instrument on board Polar, *J. Geophys. Res.*, *106*, 6043–6058, doi:10.1029/2000JA003016.

Menietti, J. D., O. Santolík, J. D. Scudder, J. S. Pickett, and D. A. Gurnett (2002), Electrostatic electron cyclotron waves generated by low-energy electron beams, *J. Geophys. Res.*, *107*, 1285–+, doi:10.1029/2001JA009223.

Menietti, J. D., O. Santolík, A. M. Rymer, G. B. Hospodarsky, A. M. Persoon, D. A. Gurnett, A. J. Coates, and D. T. Young (2008), Analysis of plasma waves observed within local plasma injections seen in Saturn's magnetosphere, *J. Geophys. Res.*, *113*, 5213–+, doi:10.1029/2007JA012856.

Menietti, J. D., S. Ye, P. H. Yoon, O. Santolík, A. M. Rymer, D. A. Gurnett, and A. J. Coates (2009), Analysis of narrowband emission observed in the Saturn magnetosphere, *J. Geophys. Res.*, *114*, 6206–+, doi:10.1029/2008JA013982.

Meredith, N. P., A. D. Johnstone, S. Szita, R. B. Horne, and R. R. Anderson (1999), "Pancake" electron distributions in the outer radiation belts, *J. Geophys. Res.*, *104*, 12,431–12,444, doi:10.1029/1998JA900083.

Meredith, N. P., R. B. Horne, A. D. Johnstone, and R. R. Anderson (2000), The temporal evolution of electron distributions and associated wave activity following substorm injections in the inner magnetosphere, *J. Geophys. Res.*, *105*, 12,907–12,918, doi:10.1029/2000JA900010.

Meredith, N. P., R. B. Horne, and R. R. Anderson (2001), Substorm dependence of chorus amplitudes: Implications for the acceleration of electrons to relativistic energies, *J. Geophys. Res.*, *106*, 13,165–13,178, doi:10.1029/2000JA900156.

Meredith, N. P., M. Cain, R. B. Horne, R. M. Thorne, D. Summers, and R. R. Anderson (2003a), Evidence for chorus-driven electron acceleration to relativistic energies from a survey of geomagnetically disturbed periods, *J. Geophys. Res.*, *108*, 1248–+, doi:10.1029/2002JA009764.

Meredith, N. P., R. M. Thorne, R. B. Horne, D. Summers, B. J. Fraser, and R. R. Anderson (2003b), Statistical analysis of relativistic electron energies for cyclotron resonance with EMIC waves observed on CRRES, *J. Geophys. Res.*, *108*, 1250–+, doi:10.1029/2002JA009700.

Meredith, N. P., R. B. Horne, R. M. Thorne, and R. R. Anderson (2003c), Favored regions for chorus-driven electron acceleration to relativistic energies in the Earth's outer radiation belt, *Geophys. Res. Lett.*, *30*, 160,000–1, doi:10.1029/2003GL017698.

Meredith, N. P., R. B. Horne, R. M. Thorne, D. Summers, and R. R. Anderson (2004), Substorm dependence of plasmaspheric hiss, *J. Geophys. Res.*, *109*, 6209–+, doi:10.1029/2004JA010387.

Meredith, N. P., R. B. Horne, M. A. Clilverd, D. Horsfall, R. M. Thorne, and R. R. Anderson (2006), Origins of plasmaspheric hiss, *J. Geophys. Res.*, *111*, 9217–+, doi:10.1029/2006JA011707.

Meredith, N. P., R. B. Horne, S. A. Glauert, and R. R. Anderson (2007), Slot region electron loss timescales due to plasmaspheric hiss and lightning-generated whistlers, *J. Geophys. Res.*, *112*, 8214–+, doi:10.1029/2007JA012413.

Meredith, N. P., R. B. Horne, S. A. Glauert, D. N. Baker, S. G. Kanekal, and J. M. Albert (2009a), Relativistic electron loss timescales in the slot region, *J. Geophys. Res.*, *114*, 3222–+, doi:10.1029/2008JA013889.

Meredith, N. P., R. B. Horne, R. M. Thorne, and R. R. Anderson (2009b), Survey of upper band chorus and ECH waves: Implications for the diffuse aurora, *J. Geophys. Res.*, *114*, 7218–+, doi:10.1029/2009JA014230.

Messmer, P. (2002), Temperature isotropization in solar flare plasmas due to the electron firehose instability, *Astron. & Astrophys.*, *382*, 301–311, doi:10.1051/0004-6361:20011583.

Meyer, R. L., and G. Leclert (1974), Damped cyclotron harmonic waves at oblique propagation, *Phys. Lett. A*, *48*, 411–412, doi:10.1016/0375-9601(74)90601-X.

Meyer-Vernet, N., and C. Perche (1989), Tool kit for antennae and thermal noise near the plasma frequency, *J. Geophys. Res.*, *94*, 2405–2415, doi:10.1029/JA094iA03p02405.

Meziane, K., and C. D'Uston (1998), A statistical study of the upstream intermediate ion boundary in the Earth's foreshock, *Ann. Geophys.*, *16*, 125–133, doi:10.1007/s005850050585.

Meziane, K., C. Mazelle, C. D'Uston, H. Rème, R. P. Lin, C. W. Carlson, D. Larson, J. P. McFadden, R. E. Ergun, K. A. Anderson, G. K. Parks, D. Berdichevsky, and R. P. Lepping (1997), Wind observation of gyrating-like ion distributions and low frequency waves upstream from the earth's bow shock, *Adv. Space Res.*, *20*, 703–706, doi:10.1016/S0273-1177(97)00459-6.

Meziane, K., R. P. Lin, G. K. Parks, D. E. Larson, S. D. Bale, G. M. Mason, J. R. Dwyer, and R. P. Lepping (1999), Evidence for acceleration of ions to ~1 MeV by adiabatic-like reflection at the quasi-perpendicular Earth's bow shock, *Geophys. Res. Lett.*, *26*, 2925–2928, doi:10.1029/1999GL900603.

Meziane, K., C. Mazelle, R. P. Lin, D. LeQuéau, D. E. Larson, G. K. Parks, and R. P. Lepping (2001), Three-dimensional observations of gyrating ion distributions far upstream from the Earth's bow shock and their association with low-frequency waves, *J. Geophys. Res.*, *106*, 5731–5742, doi:10.1029/2000JA900079.

Meziane, K., A. J. Hull, A. M. Hamza, and R. P. Lin (2002), On the bow shock θ_{Bn} dependence of upstream 70 keV to 2 MeV ion fluxes, *J. Geophys. Res.*, *107*, 1243–+, doi:10.1029/2001JA005012.

Meziane, K., M. Wilber, R. P. Lin, and G. K. Parks (2003), Gyrophase-restricted 100 keV-2 MeV ion beams near the foreshock boundary, *Geophys. Res. Lett.*, *30*, 200,000–1, doi:10.1029/2003GL017592.

Meziane, K., M. Wilber, C. Mazelle, D. LeQuéau, H. Kucharek, E. A. Lucek, H. Rème, A. M. Hamza, J. A. Sauvaud, J. M. Bosqued, I. Dandouras, G. K. Parks, M. McCarthy, B. Klecker, A. Korth, M. B. Bavassano-Cattaneo, and R. N. Lundin (2004a), Simultaneous observations of field-aligned beams and gyrating ions in the terrestrial foreshock, *J. Geophys. Res.*, *109*, 5107–+, doi:10.1029/2003JA010374.

Meziane, K., C. Mazelle, M. Wilber, D. Lequéau, J. Eastwood, H. Rème, I. Dandouras, J. Sauvaud, J. Bosqued, G. Parks, L. Kistler, M. McCarthy, B. Klecker, A. Korth, M. Bavassano-Cattaneo, R. Lundin, and A. Balogh (2004b), Bow shock specularly reflected ions in the presence of low-frequency electromagnetic waves: a case study, *Ann. Geophys.*, *22*, 2325–2335.

Meziane, K., M. Wilber, A. M. Hamza, C. Mazelle, G. K. Parks, H. Rème, and E. A. Lucek (2007), Evidence for a high-energy tail associated with foreshock field-aligned beams, *J. Geophys. Res.*, *112*, 1101–+, doi:10.1029/2006JA011751.

Meziane, K., A. M. Hamza, M. Wilber, M. A. Lee, C. Mazelle, E. A. Lucek, T. Hada, and A. Markowitch (2010), *Effect of Shock Normal Orientation Fluctuations on Field-Aligned Beam Distributions*, pp. 349–362, Springer Science, doi:10.1007/978-90-481-3499-1_23.

Meziane, K., A. M. Hamza, M. Wilber, M. A. Lee, C. Mazelle, E. A. Lucek, and T. Hada (2011a), Specular refection at a non-stationary shock: A simple model, *Planet. Space Sci.*, *59*, 495–501, doi:10.1016/j.pss.2010.10.016.

Meziane, K., A. M. Hamza, M. Wilber, C. Mazelle, and M. A. Lee (2011b), Anomalous foreshock field-aligned beams observed by Cluster, *Ann. Geophys.*, *29*, 1967–1975, doi:10.5194/angeo-29-1967-2011.

Miao, B., H. Kucharek, E. Möbius, C. Mouikis, H. Matsui, Y. Liu, and E. A. Lucek (2009), Remote sensing of local structure of the quasi-perpendicular Earth's bow shock by using field-aligned beams, *Ann. Geophys.*, *27*, 913–921.

Mielke, T. A., and R. A. Helliwell (1992), An experiment on the threshold effect in the coherent wave instability, *Geophys. Res. Lett.*, *19*, 2075–2078, doi:10.1029/92GL02179.

Migliuolo, S. (1985), Lower hybrid waves in finite-beta plasmas, destabilized by electron beams, *J. Geophys. Res.*, *90*, 377–385, doi:10.1029/JA090iA01p00377.

Millan, R. M., and R. M. Thorne (2007), Review of radiation belt relativistic electron losses, *J. Atmos. Solar-Terr. Phys.*, *69*, 362–377, doi:10.1016/j.jastp.2006.06.019.

Miller, J. A. (1998), Particle Acceleration in Impulsive Solar Flares, *Space Sci. Rev.*, *86*, 79–105, doi:10.1023/A:1005066209536.

Miteva, R., G. Mann, C. Vocks, and H. Aurass (2007), Excitation of electrostatic fluctuations by jets in a flaring plasma, *Astron. & Astrophys.*, *461*, 1127–1132, doi:10.1051/0004-6361:20053736.

Miyake, T., Y. Omura, H. Matsumoto, and H. Kojima (1998), Two-dimensional computer simulations of electrostatic solitary waves observed by Geotail spacecraft, *J. Geophys. Res.*, *103*, 11,841–11,850, doi:10.1029/98JA00760.

Miyake, T., Y. Omura, and H. Matsumoto (2000), Electrostatic particle simulations of solitary waves in the auroral region, *J. Geophys. Res.*, *105*, 23,239–23,250, doi:10.1029/2000JA000001.

Möbius, E., H. Kucharek, C. Mouikis, E. Georgescu, L. M. Kistler, M. A. Popecki, M. Scholer, J. M. Bosqued, H. Rème, C. W. Carlson, B. Klecker, A. Korth, G. K. Parks, J. C. Sauvaud, H. Balsiger, M.-B. Bavassano-Cattaneo, I. Dandouras, A. M. Dilellis, L. Eliasson, V. Formisano, T. Horbury, W. Lennartsson, R. Lundin, M. McCarthy, J. P. McFadden, and G. Paschmann (2001), Observations of the spatial and temporal structure of field-aligned beam and gyrating ring distributions at the quasi-perpendicular bow shock with Cluster CIS, *Ann. Geophys.*, *19*, 1411–1420.

Moebius, E., M. Scholer, N. Sckopke, G. Paschmann, and H. Luehr (1987), The distribution function of diffuse ions and the magnetic field power spectrum upstream of earth's bow shock, *Geophys. Res. Lett.*, *14*, 681–684, doi:10.1029/GL014i007p00681.

Moiseev, S. S., and R. Z. Sagdeev (1963), Collisionless shock waves in a plasma in a weak magnetic field, *J. Nucl. Energy*, *5*, 43–47, doi:10.1088/0368-3281/5/1/309.

Montgomery, M. D., S. P. Gary, W. C. Feldman, and D. W. Forslund (1976), Electromagnetic instabilities driven by unequal proton beams in the solar wind, *J. Geophys. Res.*, *81*, 2743–2749, doi:10.1029/JA081i016p02743.

Moore, T. E., C. R. Chappell, M. O. Chandler, S. A. Fields, C. J. Pollock, D. L. Reasoner, D. T. Young, J. L. Burch, N. Eaker, J. H. Waite, Jr., D. J. McComas, J. E. Nordholdt, M. F. Thomsen, J. J. Berthelier, and R. Robson (1995), The Thermal Ion Dynamics Experiment and Plasma Source Instrument, *Space Sci. Rev.*, *71*, 409–458, doi:10.1007/BF00751337.

Moreira, A. (1983), Stability analysis of magnetosheath lion roars, *Planet. Space Sci.*, *31*, 1165–1170, doi:10.1016/0032-0633(83)90105-8.

Morlet, J. (1982), Wave propagation and sampling theory–Part II: Sampling theory and complex waves, *Geophysics*, *47*, 222–236, doi:10.1190/1.1441329.

Morlet, J., G. Arens, I. Forgeau, and D. Giard (1982), Wave propagation and sampling theory–Part I: Complex signal and scattering in multilayered media, *Geophysics*, *47*, 203–221, doi:10.1190/1.1441328.

Morse, R. L. (1965), Adiabatic Time Development of Plasma Sheaths, *Phys. Fluids*, *8*, 308–314, doi:10.1063/1.1761224.

Morse, R. L., and C. W. Nielson (1971), Studies of Turbulent Heating of Hydrogen Plasma by Numerical Simulation, *Phys. Rev. Lett.*, *26*, 3–6, doi:10.1103/PhysRevLett.26.3.

Morton, K. W. (1964), Finite Amplitude Compression Waves in a Collision-Free Plasma, *Phys. Fluids*, *7*, 1800–1815.

Moses, S. L., F. V. Coroniti, C. F. Kennel, F. L. Scarf, E. W. Greenstadt, W. S. Kurth, and R. P. Lepping (1985a), High time resolution plasma wave and magnetic field observations of the Jovian bow shock, *Geophys. Res. Lett.*, *12*, 183–186, doi:10.1029/GL012i004p00183.

Moses, S. L., F. V. Coroniti, C. F. Kennel, and F. L. Scarf (1985b), Estimation and comparison of quasilinear electron heating in the shock foot at Jupiter and earth, *Geophys. Res. Lett.*, *12*, 609–612, doi:10.1029/GL012i009p00609.

Moses, S. L., F. V. Coroniti, C. F. Kennel, and F. L. Scarf (1988a), Wave particle interactions in the foot of the Saturnian bow shock, *J. Geophys. Res.*, *93*, 1785–1793, doi:10.1029/JA093iA03p01785.

Moses, S. L., F. V. Coroniti, C. F. Kennel, and F. L. Scarf (1988b), Generation, saturation, and convection of electrostatic waves in Jupiter's shock foot, *J. Geophys. Res.*, *93*, 8483–8490, doi:10.1029/JA093iA08p08483.

Moses, S. L., F. V. Coroniti, C. F. Kennel, F. Bagenal, and R. P. Lepping (1989), Electrostatic waves in the bow shock at Uranus, *J. Geophys. Res.*, *94*, 13,367–13,376, doi:10.1029/JA094iA10p13367.

Mosier, S. R., and D. A. Gurnett (1971), Theory of the Injun 5 Very-Low-Frequency Poynting Flux Measurements, *J. Geophys. Res.*, *76*, 972–977, doi:10.1029/JA076i004p00972.

Moullard, O., D. Burgess, and S. D. Bale (1998), Whistler waves observed during an in-situ solar type III radio burst, *A&A*, *335*, 703–708.

Moullard, O., D. Burgess, C. Salem, A. Mangeney, D. E. Larson, and S. D. Bale (2001), Whistler waves, Langmuir waves and single loss cone electron distributions inside a magnetic cloud: Observations, *J. Geophys. Res.*, *106*, 8301–8314, doi:10.1029/2000JA900144.

Moullard, O., A. Masson, H. Laakso, M. Parrot, P. Décréau, O. Santolík, and M. Andre (2002), Density modulated whistler mode emissions observed near the plasmapause, *Geophys. Res. Lett.*, *29*, 200,000–1, doi:10.1029/2002GL015101.

Mozer, F. S., S. D. Bale, and J. D. Scudder (2004), Large amplitude, extremely rapid, predominantly perpendicular electric field structures at the magnetopause, *Geophys. Res. Lett.*, *31*, 15,802–+, doi:10.1029/2004GL020062.

Mühlbachler, S., D. Langmayr, A. T. Y. Lui, N. V. Erkaev, I. V. Alexeev, P. W. Daly, and H. K. Biernat (2009), Cluster observations showing the indication of the formation of a modified-two-stream instability in the geomagnetic tail, *Adv. Space Res.*, *43*, 1588–1593, doi:10.1016/j.asr.2009.01.012.

Muller, A., N. Djuric, G. H. Dunn, and D. S. Belic (1986), Absolute detection efficiencies of microchannel plates for 0.1-2.3 keV electrons and 2.1-4.4 keV Mg(+) ions, *Rev. Sci. Inst.*, *57*, 349–353, doi:10.1063/1.1138944.

Murtaza, G., and P. K. Shukla (1984), Nonlinear generation of electromagnetic waves in a magnetoplasma, *J. Plasma Phys.*, *31*, 423–436, doi:10.1017/S0022377800001756.

Muschietti, L., and C. T. Dum (1990), Current-driven ion cyclotron turbulence - Evolution of the electron distribution and wave spectrum, *J. Geophys. Res.*, *95*, 173–187, doi:10.1029/JA095iA01p00173.

Muschietti, L., and C. T. Dum (1991), Nonlinear wave scattering and electron beam relaxation, *Phys. Fluids B*, *3*, 1968–1982, doi:10.1063/1.859665.

Muschietti, L., and B. Lembège (2006), Electron cyclotron microinstability in the foot of a perpendicular shock: A self-consistent PIC simulation, *Adv. Space Res.*, *37*, 483–493, doi:10.1016/j.asr.2005.03.077.

Muschietti, L., and I. Roth (2008), Ion two-stream instabilities in the auroral acceleration zone, *J. Geophys. Res.*, *113*, 8201–+, doi:10.1029/2007JA013005.

Muschietti, L., K. Appert, and J. Vaclavik (1982), Quasisteady turbulence driven by runaway electrons, *Phys. Fluids*, *25*, 1187–1195, doi:10.1063/1.863888.

Muschietti, L., I. Roth, and R. E. Ergun (1996), On the formation of wave packets in planetary foreshocks, *J. Geophys. Res.*, *101*, 15,605–15,614, doi:10.1029/96JA00926.

Muschietti, L., R. E. Ergun, I. Roth, and C. W. Carlson (1999a), Phase-space electron holes along magnetic field lines, *Geophys. Res. Lett.*, *26*, 1093–1096, doi:10.1029/1999GL900207.

Muschietti, L., R. E. Ergun, I. Roth, and C. W. Carlson (1999b), Erratum: "Phase-space electron holes along magnetic field lines", *Geophys. Res. Lett.*, *26*, 1689–1690, doi:10.1029/1999GL900302.

Muschietti, L., I. Roth, C. W. Carlson, and R. E. Ergun (2000), Transverse Instability of Magnetized Electron Holes, *Phys. Rev. Lett.*, *85*, 94–97, doi:10.1103/PhysRevLett.85.94.

Nagai, T., J. L. Horwitz, R. R. Anderson, and C. R. Chappell (1985), Structure of the plasmapause from ISEE 1 low-energy ion and plasma wave observations, *J. Geophys. Res.*, *90*, 6622–6626, doi:10.1029/JA090iA07p06622.

Nagano, I., S. Yagitani, H. Kojima, Y. Kakehi, T. Shiozaki, H. Matsumoto, K. Hashimoto, T. Okada, S. Kokubun, and T. Yamamoto (1994), Wave form analysis of the continuum radiation observed by GEOTAIL, *Geophys. Res. Lett.*, *21*, 2911–2914, doi:10.1029/94GL02108.

Narita, Y., and K.-H. Glassmeier (2005), Dispersion analysis of low-frequency waves through the terrestrial bow shock, *J. Geophys. Res.*, *110*, 12,215–+, doi:10.1029/2005JA011256.

Narita, Y., K.-H. Glassmeier, K.-H. Fornaçon, I. Richter, S. Schäfer, U. Motschmann, I. Dandouras, H. Rème, and E. Georgescu (2006), Low-frequency wave characteristics in the upstream and downstream regime of the terrestrial bow shock, *J. Geophys. Res.*, *111*, 1203–+, doi:10.1029/2005JA011231.

Ne&McAron, Z. Ečěk, J. Šafránková, L. Přech, A. Koval, and J. Merka (2010), Propagation of Interplanetary Shocks Across the Bow Shock, *Twelfth International Solar Wind Conference*, *1216*, 475–478, doi:10.1063/1.3395906.

Neubauer, F. M., and G. Musmann (1977), Fast magnetic fluctuations in the solar wind - HELIOS I, *J. Geophys. Res.*, *82*, 3201–3212, doi:10.1029/JA082i022p03201.

Neugebauer, M. (2010), Propagating Shocks, *Space Sci. Rev.*, pp. 134–+, doi:10.1007/s11214-010-9707-2.

Neugebauer, M., and J. Giacalone (2005), Multispacecraft observations of interplanetary shocks: Nonplanarity and energetic particles, *J. Geophys. Res.*, *110*, 12,106–+, doi:10.1029/2005JA011380.

Neugebauer, M., and C. W. Snyder (1962), Solar Plasma Experiment, *Science*, *138*, 1095–1097, doi:10.1126/science.138.3545.1095-a.

Newbury, J. A., C. T. Russell, J. L. Phillips, and S. P. Gary (1998a), Electron temperature in the ambient solar wind: Typical properties and a lower bound at 1 AU, *J. Geophys. Res.*, *103*, 9553–9566, doi:10.1029/98JA00067.

Newbury, J. A., C. T. Russell, and M. Gedalin (1998b), The ramp widths of high-Mach-number, quasi-perpendicular collisionless shocks, *J. Geophys. Res.*, *1032*, 29,581–29,594, doi:10.1029/1998JA900024.

Ney, E. P., and P. J. Kellogg (1959), Kellogg and Ney's Model of the Solar Corona, *Nature*, *184*, 1122–1123, doi:10.1038/1841122a0.

Ni, B., R. M. Thorne, Y. Y. Shprits, and J. Bortnik (2008), Resonant scattering of plasma sheet electrons by whistler-mode chorus: Contribution to diffuse auroral precipitation, *Geophys. Res. Lett.*, *35*, 11,106–+, doi:10.1029/2008GL034032.

Ni, B., R. M. Thorne, Y. Y. Shprits, K. G. Orlova, and N. P. Meredith (2011), Chorus-driven resonant scattering of diffuse auroral electrons in nondipolar magnetic fields, *J. Geophys. Res.*, *116*, A06225, doi:10.1029/2011JA016453.

Nishikawa, K., O. Buneman, and T. Neubert (1994), New aspects of whistler waves driven by an electron beam studied by a 3-D electromagnetic code, *Geophys. Res. Lett.*, *21*, 1019–1022, doi:10.1029/94GL00695.

Nishikawa, K., J. Niemiec, P. E. Hardee, M. Medvedev, H. Sol, Y. Mizuno, B. Zhang, M. Pohl, M. Oka, and D. H. Hartmann (2009), Weibel Instability and Associated Strong Fields in a Fully Three-Dimensional Simulation of a Relativistic Shock, *Astrophys. J.*, *698*, L10–L13, doi:10.1088/0004-637X/698/1/L10.

Nishimura, K., S. P. Gary, and H. Li (2002), Whistler anisotropy instability: Wave-particle scattering rate, *J. Geophys. Res.*, *107*, 1375–+, doi:10.1029/2002JA009250.

Nunn, D. (1974), A self-consistent theory of triggered VLF emissions, *Planet. Space Sci.*, *22*, 349–378, doi:10.1016/0032-0633(74)90070-1.

Nunn, D., Y. Omura, H. Matsumoto, I. Nagano, and S. Yagitani (1997), The numerical simulation of VLF chorus and discrete emissions observed on the Geotail satellite using a Vlasov code, *J. Geophys. Res.*, *102*, 27,083–27,098, doi:10.1029/97JA02518.

Nunn, D., A. Demekhov, V. Trakhtengerts, and M. J. Rycroft (2003), VLF emission triggering by a highly anisotropic energetic electron plasma, *Ann. Geophys.*, *21*, 481–492.

Nunn, D., O. Santolík, M. Rycroft, and V. Trakhtengerts (2009), On the numerical modelling of VLF chorus dynamical spectra, *Ann. Geophys.*, *27*, 2341–2359.

Oberheide, J., P. Wilhelms, and M. Zimmer (1997), RAPID COMMUNICATION: New results on the absolute ion detection efficiencies of a microchannel plate, *Meas. Sci. Technol.*, *8*, 351–354, doi:10.1088/0957-0233/8/4/001.

O'C. Drury, L., F. A. Aharonian, D. Malyshev, and S. Gabici (2009), On the plasma temperature in supernova remnants with cosmic-ray modified shocks, *Astro. and Astrophys.*, *496*, 1–6, doi:10.1051/0004-6361/200811394.

Ofman, L., M. Balikhin, C. T. Russell, and M. Gedalin (2009), Collisionless relaxation of ion distributions downstream of laminar quasi-perpendicular shocks, *J. Geophys. Res.*, *114*, 9106–+, doi:10.1029/2009JA014365.

Ogilvie, K. W., D. J. Chornay, R. J. Fritzenreiter, F. Hunsaker, J. Keller, J. Lobell, G. Miller, J. D. Scudder, E. C. Sittler, Jr., R. B. Torbert, D. Bodet, G. Needell, A. J. Lazarus, J. T. Steinberg, J. H. Tappan, A. Mavretic, and E. Gergin (1995), SWE, A Comprehensive Plasma Instrument for the Wind Spacecraft, *Space Sci. Rev.*, *71*, 55–77, doi:10.1007/BF00751326.

Ohira, Y., and F. Takahara (2008), Oblique Ion Two-Stream Instability in the Foot Region of a Collisionless Shock, *Astrophys. J.*, *688*, 320–326, doi:10.1086/592182.

Ohnuma, T., and T. Watanabe (1982), Wave fronts of electromagnetic cyclotron harmonic waves, *Phys. Fluids*, *25*, 1217–1219, doi:10.1063/1.863893.

Ohnuma, T., T. Watanabe, and H. Sanuki (1982), Spatial investigations of mode conversion between an electrostatic cyclotron harmonic wave and an electromagnetic ordinary wave, *Radio Science*, *17*, 1633–1636, doi:10.1029/RS017i006p01633.

Øieroset, M., T. D. Phan, M. Fujimoto, R. P. Lin, and R. P. Lepping (2001), In situ detection of collisionless reconnection in the Earth's magnetotail, *Nature*, *412*, 414–417, doi:10.1038/35086520.

Øieroset, M., R. P. Lin, T. D. Phan, D. E. Larson, and S. D. Bale (2002), Evidence for Electron Acceleration up to ˜300 keV in the Magnetic Reconnection Diffusion Region of Earth's Magnetotail, *Phys. Rev. Lett.*, *89*, 195,001–+, doi:10.1103/PhysRevLett.89.195001.

Oka, M., T. Terasawa, Y. Seki, M. Fujimoto, Y. Kasaba, H. Kojima, I. Shinohara, H. Matsui, H. Matsumoto, Y. Saito, and T. Mukai (2006), Whistler critical Mach number and electron acceleration at the bow shock: Geotail observation, *Geophys. Res. Lett.*, *33*, 24,104–+, doi:10.1029/2006GL028156.

Omidi, N., and D. Winske (1990), Steepening of kinetic magnetosonic waves into shocklets - Simulations and consequences for planetary shocks and comets, *J. Geophys. Res.*, *95*, 2281–2300, doi:10.1029/JA095iA03p02281.

Omidi, N., K. B. Quest, and D. Winske (1990), Low Mach number parallel and quasi-parallel shocks, *J. Geophys. Res.*, *95*, 20,717–20,730, doi:10.1029/JA095iA12p20717.

Omura, Y., and H. Matsumoto (1982), Computer simulations of basic processes of coherent whistler wave-particle interactions in the magnetosphere, *J. Geophys. Res.*, *87*, 4435–4444, doi:10.1029/JA087iA06p04435.

Omura, Y., and D. Nunn (2011), Triggering process of whistler mode chorus emissions in the magnetosphere, *J. Geophys. Res.*, *116*, A05,205, doi:10.1029/2010JA016280.

Omura, Y., H. Matsumoto, T. Miyake, and H. Kojima (1996), Electron beam instabilities as generation mechanism of electrostatic solitary waves in the magnetotail, *J. Geophys. Res.*, *101*, 2685–2698, doi:10.1029/95JA03145.

Omura, Y., N. Furuya, and D. Summers (2007), Relativistic turning acceleration of resonant electrons by coherent whistler mode waves in a dipole magnetic field, *J. Geophys. Res.*, *112*, 6236–+, doi:10.1029/2006JA012243.

Omura, Y., Y. Katoh, and D. Summers (2008), Theory and simulation of the generation of whistler-mode chorus, *J. Geophys. Res.*, *113*, 4223–+, doi:10.1029/2007JA012622.

Omura, Y., M. Hikishima, Y. Katoh, D. Summers, and S. Yagitani (2009), Nonlinear mechanisms of lower-band and upper-band VLF chorus emissions in the magnetosphere, *J. Geophys. Res.*, *114*, 7217–+, doi:10.1029/2009JA014206.

Onsager, T. G., and R. H. Holzworth (1990), Measurement of the electron beam mode in earth's foreshock, *J. Geophys. Res.*, *95*, 4175–4186, doi:10.1029/JA095iA04p04175.

Onsager, T. G., R. H. Holzworth, H. C. Koons, O. H. Bauer, and D. A. Gurnett (1989), High-frequency electrostatic waves near earth's bow shock, *J. Geophys. Res.*, *94*, 13,397–13,408, doi:10.1029/JA094iA10p13397.

Onsager, T. G., M. F. Thomsen, J. T. Gosling, S. J. Bame, and C. T. Russell (1990a), Survey of coherent ion reflection at the quasi-parallel bow shock, *J. Geophys. Res.*, *95*, 2261–2271, doi:10.1029/JA095iA03p02261.

Onsager, T. G., M. F. Thomsen, J. T. Gosling, and S. J. Bame (1990b), Observational test of a hot flow anomaly formation mechanism, *J. Geophys. Res.*, *95*, 11,967–11,974, doi:10.1029/JA095iA08p11967.

Onsager, T. G., M. F. Thomsen, and D. Winske (1990c), Hot flow anomaly formation by magnetic deflection, *Geophys. Res. Lett.*, *17*, 1621–1624, doi:10.1029/GL017i010p01621.

Onsager, T. G., D. Winske, and M. F. Thomsen (1991a), Interaction of a finite-length ion beam with a background plasma - Reflected ions at the quasi-parallel bow shock, *J. Geophys. Res.*, *96*, 1775–1788, doi:10.1029/90JA02008.

Onsager, T. G., D. Winske, and M. F. Thomsen (1991b), Ion injection simulations of quasi-parallel shock re-formation, *J. Geophys. Res.*, *96*, 21,183, doi:10.1029/91JA01986.

Oppenheim, M., D. L. Newman, and M. V. Goldman (1999), Evolution of Electron Phase-Space Holes in a 2D Magnetized Plasma, *Phys. Rev. Lett.*, *83*, 2344–2347, doi:10.1103/PhysRevLett.83.2344.

Oppenheim, M. M., G. Vetoulis, D. L. Newman, and M. V. Goldman (2001), Evolution of electron phase-space holes in 3D, *Geophys. Res. Lett.*, *28*, 1891–1894, doi:10.1029/2000GL012383.

Orlowski, D. S., and C. T. Russell (1991), ULF waves upstream of the Venus bow shock - Properties of one-hertz waves, *J. Geophys. Res.*, *96*, 11,271–+, doi:10.1029/91JA01103.

Orlowski, D. S., G. K. Crawford, and C. T. Russell (1990), Upstream waves at Mercury, Venus and earth - Comparison of the properties of one Hertz waves, *Geophys. Res. Lett.*, *17*, 2293–2296, doi:10.1029/GL017i013p02293.

Orlowski, D. S., C. T. Russell, and R. P. Lepping (1992), Wave phenomena in the upstream region of Saturn, *J. Geophys. Res.*, *97*, 19,187–+, doi:10.1029/92JA01461.

Orlowski, D. S., C. T. Russell, D. Krauss-Varban, and N. Omidi (1994), A test of the Hall-MHD model: Application to low-frequency upstream waves at Venus, *J. Geophys. Res.*, *99*, 169–178, doi:10.1029/93JA01808.

Orlowski, D. S., C. T. Russell, D. Krauss-Varban, N. Omidi, and M. F. Thomsen (1995), Damping and spectral formation of upstream whistlers, *J. Geophys. Res.*, *100*, 17,117–17,128, doi:10.1029/95JA00062.

Orlowski, P. (2004), Selected problems of frequency analysis for time varying, discrete-time systems using singular value decomposition and discrete Fourier transform, *Journal of Sound Vibration*, *278*, 903–921, doi:10.1016/j.jsv.2003.10.061.

Orta, J. A., M. A. Huerta, and G. C. Boynton (2003), Magnetohydrodynamic Shock Heating of the Solar Corona, *Astrophys. J.*, *596*, 646–655, doi:10.1086/377706.

Osmane, A., A. M. Hamza, and K. Meziane (2010), On the generation of proton beams in fast solar wind in the presence of obliquely propagating Alfvén waves, *J. Geophys. Res.*, *115*, 5101–+, doi:10.1029/2009JA014655.

Ossakow, S. L., I. Haber, and R. N. Sudan (1972a), Computer Studies of Collionless Damping of a Large Amplitude Whistler Wave, *Phys. Fluids*, *15*, 935–937, doi:10.1063/1.1694005.

Ossakow, S. L., I. Haber, and E. Ott (1972b), Simulation of Whistler Instabilities in Anisotropic Plasmas, *Phys. Fluids*, *15*, 1538–1540, doi:10.1063/1.1694123.

Ossakow, S. L., E. Ott, and I. Haber (1972c), Nonlinear Evolution of Whistler Instabilities, *Phys. Fluids*, *15*, 2314–2326, doi:10.1063/1.1693875.

Ostrovskii, L. A. (1976), Shock waves and solitons (selected problems), *Radiophys. Quantum Electron.*, *19*, 464–486, doi:10.1007/BF01034467.

Owens, A., R. Baker, T. L. Cline, N. Gehrels, J. Jermakian, T. Nolan, R. Ramaty, H. Seifert, D. A. Shephard, G. Smith, D. E. Stilwell, B. J. Teegarden, C. P. Cork, D. A. Landis, P. N. Luke, N. W. Madden, D. Malone, R. H. Pehl, H. Yaver, K. Hurley, S. Mathias, and A. H. Post, Jr. (1995), A High-Resolution GE Spectrometer for Gamma-Ray Burst Astronomy, *Space Sci. Rev.*, *71*, 273–296, doi:10.1007/BF00751333.

Oya, H. (1972), Turbulence of Electrostatic Electron Cyclotron Harmonic Waves Observed by Ogo 5, *J. Geophys. Res.*, *77*, 3483–3494, doi:10.1029/JA077i019p03483.

Oya, H., M. Iizima, and A. Morioka (1994), Periodic bursts of electrostatic electron cyclotron harmonic (ESCH) waves in the boundary plasmasheet region of the magnetosphere tail, *J. Geophys. Res.*, *21*, 233–236, doi:10.1029/93GL02705.

Paesold, G., and A. O. Benz (2003), Test particle simulation of the Electron Firehose instability, *Astron. & Astrophys.*, *401*, 711–720, doi:10.1051/0004-6361:20030113.

Pagel, C., N. U. Crooker, D. E. Larson, S. W. Kahler, and M. J. Owens (2005a), Understanding electron heat flux signatures in the solar wind, *J. Geophys. Res.*, *110*, 1103–+, doi:10.1029/2004JA010767.

Pagel, C., N. U. Crooker, and D. E. Larson (2005b), Assessing electron heat flux dropouts as signatures of magnetic field line disconnection from the Sun, *Geophys. Res. Lett.*, *32*, 14,105–+, doi:10.1029/2005GL023043.

Pagel, C., S. P. Gary, C. A. de Koning, R. M. Skoug, and J. T. Steinberg (2007), Scattering of suprathermal electrons in the solar wind: ACE observations, *J. Geophys. Res.*, *112*, 4103–+, doi:10.1029/2006JA011967.

Palmadesso, P., and G. Schmidt (1971), Collisionless Damping of a Large Amplitude Whistler Wave, *Phys. Fluids*, *14*, 1411–1418, doi:10.1063/1.1693622.

Palmadesso, P. J., and G. Schmidt (1972), Stability of a Steady, Large Amplitude Whistler Wave, *Phys. Fluids*, *15*, 485–492, doi:10.1063/1.1693933.

Paolini, F. R., and G. C. Theodoridis (1967), Charged Particle Transmission Through Spherical Plate Electrostatic Analyzers, *Rev. Sci. Inst.*, *38*, 579–588, doi:10.1063/1.1720771.

Papadopoulos, K. (1971), Ion thermalization in the earth's bow shock., *J. Geophys. Res.*, *76*, 3806–3810, doi: 10.1029/JA076i016p03806.

Papadopoulos, K. (1985), Microinstabilities and anomalous transport, in *Collisionless Shocks in the Heliosphere: A Tutorial Review*, *Geophys. Monogr. Ser.*, vol. 34, edited by R. G. Stone and B. T. Tsurutani, pp. 59–90, AGU, Washington, D.C.

Papadopoulos, K. (1988), Electron heating in superhigh Mach number shocks, *Astrophys. Space Sci.*, *144*, 535–547, doi: 10.1007/BF00793203.

Papadopoulos, K., and T. Coffey (1974), Anomalous Resistivity in the Auroral Plasma, *J. Geophys. Res.*, *79*, 1558–1561, doi: 10.1029/JA079i010p01558.

Papadopoulos, K., and P. Palmadesso (1976), Excitation of lower hybrid waves in a plasma by electron beams, *Phys. Fluids*, *19*, 605–+, doi:10.1063/1.861501.

Papadopoulos, K., C. E. Wagner, and I. Haber (1971), High-Mach-Number Turbulent Magnetosonic Shocks, *Phys. Rev. Lett.*, *27*, 982–986, doi:10.1103/PhysRevLett.27.982.

Parashar, T. N., M. A. Shay, P. A. Cassak, and W. H. Matthaeus (2009), Kinetic dissipation and anisotropic heating in a turbulent collisionless plasma, *Phys. Plasmas*, *16*(3), 032,310–+, doi:10.1063/1.3094062.

Parker, E. N. (1963), *Interplanetary dynamical processes.*, New York, Interscience Publishers.

Parks, G. K., E. Lee, F. Mozer, M. Wilber, E. Lucek, I. Dandouras, H. Rème, C. Mazelle, J. B. Cao, K. Meziane, M. L. Goldstein, and P. Escoubet (2006), Larmor radius size density holes discovered in the solar wind upstream of Earth's bow shock, *Phys. Plasmas*, *13*, 050,701–+, doi:10.1063/1.2201056.

Parks, G. K., E. Lee, N. Lin, F. Mozer, M. Wilber, E. Lucek, I. Dandouras, H. Rème, J. B. Cao, P. Canu, N. Cornilleau-Wehrlin, P. Décréau, M. L. Goldstein, and P. Escoubet (2007), Density holes in the upstream solar wind, in *Turbulence and Nonlinear Processes in Astrophysical Plasmas*, *American Institute of Physics Conference Series*, vol. 932, edited by D. Shaikh & G. P. Zank, pp. 9–15, doi:10.1063/1.2778939.

Parrot, M., O. Santolýk, N. Cornilleau-Wehrlin, M. Maksimovic, and C. C. Harvey (2003), Source location of chorus emissions observed by Cluster, *Ann. Geophys.*, *21*, 473–480.

Parrot, M., J. Manninen, O. Santolík, F. Němec, T. Turunen, T. Raita, and E. Macúšová (2007), Simultaneous observation on board a satellite and on the ground of large-scale magnetospheric line radiation, *Geophys. Res. Lett.*, *34*, 19,102–+, doi:10.1029/2007GL030630.

Paschmann, G., and P. W. Daly (1998), Analysis Methods for Multi-Spacecraft Data. ISSI Scientific Reports Series SR-001, ESA/ISSI, Vol. 1. ISBN 1608-280X, 1998, *ISSI Sci. Rep. Ser.*, *1*.

Paschmann, G., N. Sckopke, S. J. Bame, J. R. Asbridge, J. T. Gosling, C. T. Russell, and E. W. Greenstadt (1979), Association of low-frequency waves with suprathermal ions in the upstream solar wind, *Geophys. Res. Lett.*, *6*, 209–212, doi: 10.1029/GL006i003p00209.

Paschmann, G., N. Sckopke, J. R. Asbridge, S. J. Bame, and J. T. Gosling (1980), Energization of solar wind ions by reflection from the earth's bow shock, *J. Geophys. Res.*, *85*, 4689–4693, doi:10.1029/JA085iA09p04689.

Paschmann, G., N. Sckopke, I. Papamastorakis, J. R. Asbridge, S. J. Bame, and J. T. Gosling (1981), Characteristics of reflected and diffuse ions upstream from the earth's bow shock, *J. Geophys. Res.*, *86*, 4355–4364, doi: 10.1029/JA086iA06p04355.

Paschmann, G., N. Sckopke, S. J. Bame, and J. T. Gosling (1982), Observations of gyrating ions in the foot of the nearly perpendicular bow shock, *Geophys. Res. Lett.*, *9*, 881–884, doi: 10.1029/GL009i008p00881.

Paschmann, G., H. Loidl, P. Obermayer, M. Ertl, R. Laborenz, N. Sckopke, W. Baumjohann, C. W. Carlson, and D. W. Curtis (1985), The plasma instrument for AMPTE IRM, *IEEE Trans. Geosci. Remote Sens.*, *23*, 262–266, doi: 10.1109/TGRS.1985.289525.

Pasmanik, D. L., A. G. Demekhov, D. Nunn, V. Y. Trakhtengerts, and M. J. Rycroft (2002), Cyclotron amplification of whistler-mode waves: A parametric study relevant to discrete VLF emissions in the Earth's magnetosphere, *J. Geophys. Res.*, *107*, 1162–+, doi:10.1029/2001JA000256.

Patrick, R. M., and E. R. Pugh (1969), Laboratory Study of Turbulence in Collision-Free Shocks, *Phys. Fluids*, *12*, 366–378, doi:10.1063/1.1692490.

Pesses, M. E. (1982), Particle acceleration by coronal and interplanetary shock waves, *Adv. Space Res.*, *2*, 255–264, doi: 10.1016/0273-1177(82)90208-3.

Pesses, M. E., R. B. Decker, and T. P. Armstrong (1982), The acceleration of charged particles in interplanetary shock waves, *Space Sci. Rev.*, *32*, 185–204, doi:10.1007/BF00225184.

Petkaki, P., and M. P. Freeman (2008), Nonlinear Dependence of Anomalous Ion-Acoustic Resistivity on Electron Drift Velocity, *Astrophys. J.*, *686*, 686–693, doi:10.1086/590654.

Petkaki, P., C. E. J. Watt, R. B. Horne, and M. P. Freeman (2003), Anomalous resistivity in non-Maxwellian plasmas, *J. Geophys. Res.*, *108*, 1442–+, doi:10.1029/2003JA010092.

Petkaki, P., M. P. Freeman, T. Kirk, C. E. J. Watt, and R. B. Horne (2006), Anomalous resistivity and the nonlinear evolution of the ion-acoustic instability, *J. Geophys. Res.*, *111*, 1205–+, doi:10.1029/2004JA010793.

Petschek, H. E. (1958), Aerodynamic Dissipation, *Rev. Mod. Phys.*, *30*, 966–974, doi:10.1103/RevModPhys.30.966.

Pešić, S. S. (1972), Lower hybrid plasma heating, *Phys. Lett. A*, *38*, 283–285, doi:10.1016/0375-9601(72)90081-3.

Phan, T. D., D. E. Larson, R. P. Lin, J. P. McFadden, K. A. Anderson, C. W. Carlson, R. E. Ergun, S. M. Ashford, M. P. McCarthy, G. K. Parks, H. Rème, J. M. Bosqued, C. D. D'Uston, K. Wenzel, T. R. Sanderson, and A. Szabo (1996), The subsolar magnetosheath and magnetopause for high solar wind ram pressure: WIND observations, *Geophys. Res. Lett.*, *23*, 1279–1282, doi:10.1029/96GL00845.

Phan, T. D., L. M. Kistler, B. Klecker, G. Haerendel, G. Paschmann, B. U. Ö. Sonnerup, W. Baumjohann, M. B. Bavassano-Cattaneo, C. W. Carlson, A. M. DiLellis, K. Fornacon, L. A. Frank, M. Fujimoto, E. Georgescu, S. Kokubun, E. Moebius, T. Mukai, M. Øieroset, W. R. Paterson, and H. Reme (2000), Extended magnetic reconnection at the Earth's magnetopause from detection of bi-directional jets, *Nature*, *404*, 848–850.

Phan, T. D., B. U. Ö. Sonnerup, and R. P. Lin (2001), Fluid and kinetics signatures of reconnection at the dawn tail magnetopause: Wind observations, *J. Geophys. Res.*, *106*, 25,489–25,502, doi:10.1029/2001JA900054.

Phillips, J. L., J. T. Gosling, D. J. McComas, S. J. Bame, S. P. Gary, and E. J. Smith (1989a), Anisotropic thermal electron distributions in the solar wind, *J. Geophys. Res.*, *94*, 6563–6579, doi:10.1029/JA094iA06p06563.

Phillips, J. L., J. T. Gosling, D. J. McComas, S. J. Bame, and E. J. Smith (1989b), ISEE 3 observations of solar wind thermal electrons with T-perpendicular greater than T-parallel, *J. Geophys. Res.*, *94*, 13,377–13,386, doi: 10.1029/JA094iA10p13377.

Phillips, J. L., S. J. Bame, A. Barnes, B. L. Barraclough, W. C. Feldman, B. E. Goldstein, J. T. Gosling, G. W. Hoogeveen, D. J. McComas, M. Neugebauer, and S. T. Suess (1995), Ulysses solar wind plasma observations from pole to pole, *Geophys. Res. Lett.*, *22*, 3301–3304, doi:10.1029/95GL03094.

Phillips, P. E., and A. E. Robson (1972), Influence of Reflected Ions on the Magnetic Structure of a Collisionless Shock Front, *Phys. Rev. Lett.*, *29*, 154–157, doi: 10.1103/PhysRevLett.29.154.

Pickett, J., L. Chen, S. Kahler, O. Santolík, D. Gurnett, B. Tsurutani, and A. Balogh (2004a), Isolated electrostatic structures observed throughout the Cluster orbit: relationship to magnetic field strength, *Ann. Geophys.*, *22*, 2515–2523.

Pickett, J. S., D. A. Gurnett, J. D. Menietti, M. J. Ledocq, J. D. Scudder, L. A. Frank, J. B. Sigwarth, K. L. Ackerson, D. D. Morgan, J. R. Franz, P. M. Kintner, B. T. Tsurutani, C. M. Ho, J. Chen, T. A. Fritz, C. T. Russell, W. K. Peterson, Y. Kasahara, I. Kimura, S. Watanabe, G. G. Arkos, G. Rostoker, S. Kokubun, H. Fukunishi, R. F. Pfaff, F. S. Mozer, S. Hsieh, T. Mukai, and M. O. Chandler (1999), Plasma waves observed during cusp energetic particle events and their correlation with polar and akebono satellite and ground data, *Adv. Space Res.*, *24*, 23–33, doi:10.1016/S0273-1177(99)00418-4.

Pickett, J. S., J. R. Franz, J. D. Scudder, J. D. Menietti, D. A. Gurnett, G. B. Hospodarsky, R. M. Braunger, P. M. Kintner, and W. S. Kŭrth (2001), Plasma waves observed in the cusp turbulent boundary layer: An analysis of high time resolution wave and particle measurements from the Polar spacecraft, *J. Geophys. Res.*, *106*, 19,081–19,100, doi:10.1029/2000JA003012.

Pickett, J. S., J. D. Menietti, D. A. Gurnett, B. Tsurutani, P. M. Kintner, E. Klatt, and A. Balogh (2003), Solitary potential structures observed in the magnetosheath by the Cluster spacecraft, *Nonlinear Processes in Geophysics*, *10*, 3–11.

Pickett, J. S., S. W. Kahler, L.-J. Chen, R. L. Huff, O. Santolík, Y. Khotyaintsev, P. M. E. Décréau, D. Winningham, R. Frahm, M. L. Goldstein, G. S. Lakhina, B. T. Tsurutani, B. Lavraud, D. A. Gurnett, M. André, A. Fazakerley, A. Balogh, and H. Rème (2004b), Solitary waves observed in the auroral zone: the Cluster multi-spacecraft perspective, *Nonlinear Processes in Geophysics*, *11*, 183–196.

Pickett, J. S., L.-J. Chen, S. W. Kahler, O. Santolík, M. L. Goldstein, B. Lavraud, P. M. E. Décréau, R. Kessel, E. Lucek, G. S. Lakhina, B. T. Tsurutani, D. A. Gurnett, N. Cornilleau-Wehrlin, A. Fazakerley, H. Rème, and A. Balogh (2005), On the generation of solitary waves observed by Cluster in the near-Earth magnetosheath, *Nonlinear Processes in Geophysics*, *12*, 181–193.

Pierrard, V., M. Lazar, and R. Schlickeiser (2011), Evolution of the Electron Distribution Function in the Whistler Wave Turbulence of the Solar Wind, *Solar Phys.*, *269*, 421–438, doi:10.1007/s11207-010-9700-7.

Pilipp, W. G., K.-H. Muehlhaeuser, H. Miggenrieder, M. D. Montgomery, and H. Rosenbauer (1987a), Characteristics of electron velocity distribution functions in the solar wind derived from the HELIOS plasma experiment, *J. Geophys. Res.*, *92*, 1075–1092, doi:10.1029/JA092iA02p01075.

Pilipp, W. G., K.-H. Muehlhaeuser, H. Miggenrieder, M. D. Montgomery, and H. Rosenbauer (1987b), Unusual electron distribution functions in the solar wind derived from the HELIOS plasma experiment - Double-strahl distributions and distributions with an extremely anisotropic core, *J. Geophys. Res.*, *92*, 1093–1101, doi:10.1029/JA092iA02p01093.

Pilipp, W. G., K.-H. Muehlhaeuser, H. Miggenrieder, H. Rosenbauer, and R. Schwenn (1987c), Variations of electron distribution functions in the solar wind, *J. Geophys. Res.*, *92*, 1103–1118, doi:10.1029/JA092iA02p01103.

Pilipp, W. G., K. Muehlhaeuser, H. Miggenrieder, H. Rosenbauer, and R. Schwenn (1990), Large-scale variations of thermal electron parameters in the solar wind between 0.3 and 1 AU, *J. Geophys. Res.*, *95*, 6305–6329, doi:10.1029/JA095iA05p06305.

Pirjola, R. (1983), Induction in power transmission lines during geomagnetic disturbances, *Space Sci. Rev.*, *35*, 185–193, doi:10.1007/BF00242243.

Pirjola, R. (1989), Geomagnetically induced currents in the Finnish 400 kV power transmission system, *Physics of the Earth and Planetary Interiors*, *53*, 214–220, doi:10.1016/0031-9201(89)90005-8.

Pirjola, R., A. Viljanen, A. Pulkkinen, and O. Amm (2000), Space weather risk in power systems and pipelines, *Physics and Chemistry of the Earth C*, *25*, 333–337, doi:10.1016/S1464-1917(00)00027-1.

Pokhotelov, D., F. Lefeuvre, R. B. Horne, and N. Cornilleau-Wehrlin (2008), Survey of ELF-VLF plasma waves in outer radiation belt observed by Cluster STAFF-SA experiment, *Ann. Geophys.*, *26*, 3269–3277, doi:10.5194/angeo-26-3269-2008.

Porkolab, M., and J. Sinnis (1968), Cyclotron-Harmonic Plasma-Wave Echoes, *Phys. Rev. Lett.*, *21*, 1227–1231, doi:10.1103/PhysRevLett.21.1227.

Potter, D. W. (1981), Acceleration of electrons by interplanetary shocks, *J. Geophys. Res.*, *86*, 11,111–11,116, doi:10.1029/JA086iA13p11111.

Pudovkin, M. I., S. A. Zaitseva, N. O. Shumilov, and C.-V. Meister (1998), Large-Scale Electric Fields in Solar Flare Regions, *Solar Phys.*, *178*, 125–136.

Pulkkinen, A., S. Lindahl, A. Viljanen, and R. Pirjola (2005), Geomagnetic storm of 29-31 October 2003: Geomagnetically induced currents and their relation to problems in the Swedish high-voltage power transmission system, *Space Weather*, *3*, 8–+, doi:10.1029/2004SW000123.

Pulkkinen, A., A. Viljanen, and R. Pirjola (2006), Estimation of geomagnetically induced current levels from different input data, *Space Weather*, *4*, 8005–+, doi:10.1029/2006SW000229.

Pulkkinen, A., R. Pirjola, and A. Viljanen (2008), Statistics of extreme geomagnetically induced current events, *Space Weather*, *6*, 7001–+, doi:10.1029/2008SW000388.

Pulupa, M., and S. D. Bale (2008), Structure on Interplanetary Shock Fronts: Type II Radio Burst Source Regions, *Astrophys. J.*, *676*, 1330–1337, doi:10.1086/526405.

Pulupa, M., S. D. Bale, and J. C. Kasper (2008), Langmuir Waves Upstream of Interplanetary Shocks: Dependence on Shock and Plasma Parameters, *AGU Fall Meeting Abstracts*, pp. A1575+.

Pulupa, M. P., S. D. Bale, and J. C. Kasper (2010), Langmuir waves upstream of interplanetary shocks: Dependence on shock and plasma parameters, *J. Geophys. Res.*, *115*, 4106–+, doi:10.1029/2009JA014680.

Purcell, E. M. (1938), The Focusing of Charged Particles by a Spherical Condenser, *Phys. Rev.*, *54*, 818–826, doi:10.1103/PhysRev.54.818.

Quest, K. B., and V. D. Shapiro (1996), Evolution of the fire-hose instability: Linear theory and wave-wave coupling, *J. Geophys. Res.*, *101*, 24,457–24,470, doi:10.1029/96JA01534.

Quest, K. B., D. W. Forslund, J. U. Brackbill, and K. Lee (1983), Collisionless dissipation processes in quasi-parallel shocks, *Geophys. Res. Lett.*, *10*, 471–474, doi:10.1029/GL010i006p00471.

Rakowski, C. E., J. M. Laming, and P. Ghavamian (2008), The Heating of Thermal Electrons in Fast Collisionless Shocks: The Integral Role of Cosmic Rays, *Astrophys. J.*, *684*, 348–357, doi:10.1086/590245.

Rayleigh, L. (1910), Aerial Plane Waves of Finite Amplitude, *Roy. Soc. London Proc. Ser. A*, *84*, 247–284.

Raymond, J. C., B. J. Thompson, O. C. St. Cyr, N. Gopalswamy, S. Kahler, M. Kaiser, A. Lara, A. Ciaravella, M. Romoli, and R. O'Neal (2000), SOHO and radio observations of a CME shock wave, *Geophys. Res. Lett.*, *27*, 1439–1442, doi:10.1029/1999GL003669.

Reames, D. V. (2000), The Observational Consequences of Proton-Generated Waves at Shocks, in *Acceleration and Transport of Energetic Particles Observed in the Heliosphere*, *American Institute of Physics Conference Series*, vol. 528, edited by R. A. Mewaldt, J. R. Jokipii, M. A. Lee, E. Möbius, and T. H. Zurbuchen, pp. 79–+, doi:10.1063/1.1324284.

Reames, D. V. (2001), SEPs: Space Weather Hazard in Interplanetary Space, in *Space Weather*, *Geophys. Monogr. Ser.*, vol. 125, edited by P. Song, H. J. Singer, and G. L. Siscoe, p. 101, AGU, Washington, D.C.

Reinleitner, L. A., D. A. Gurnett, and D. L. Gallagher (1982), Chorus-related electrostatic bursts in the earth's outer magnetosphere, *Nature*, *295*, 46–48, doi:10.1038/295046a0.

Revathy, P. (1977), Coronal heating by ion acoustic waves, *Solar Phys.*, *53*, 445–448, doi:10.1007/BF00160287.

Revathy, P., and G. S. Lakhina (1977), Solar wind heating by heat conduction driven ion acoustic instability, *Solar Phys.*, *52*, 471–475, doi:10.1007/BF00149661.

Richardson, J. D. (2010a), Reflected ions at interplanetary shocks, *Geophys. Res. Lett.*, *37*, L12,105, doi:10.1029/2010GL043660.

Richardson, J. D. (2010b), Heliospheric shocks and sheaths, in *American Institute of Physics Conference Series*, *American Institute of Physics Conference Series*, vol. 1302, edited by J. Le Roux, G. P. Zank, A. J. Coates, & V. Florinski, pp. 231–236, doi:10.1063/1.3529975.

Riquelme, M. A., and A. Spitkovsky (2011), Electron Injection by Whistler Waves in Non-relativistic Shocks, *Astrophys. J.*, *733*, 63–+, doi:10.1088/0004-637X/733/1/63.

Roberts, C. S., and S. J. Buchsbaum (1964), Motion of a Charged Particle in a Constant Magnetic Field and a Transverse Electromagnetic Wave Propagating along the Field, *Phys. Rev.*, *135*, 381–389, doi:10.1103/PhysRev.135.A381.

Robinson, P. A. (1992), Clumpy Langmuir waves in type III radio sources, *Solar Phys.*, *139*, 147–163, doi:10.1007/BF00147886.

Robinson, P. A. (1993), Stochastic-growth theory of Langmuir growth-rate fluctuations in type III solar radio sources, *Solar Phys.*, *146*, 357–363, doi:10.1007/BF00662019.

Robinson, P. A., and I. H. Cairns (1993), Stochastic Growth Theory of Type III Solar Radio Emission, *Astrophys. J.*, *418*, 506–+, doi:10.1086/173412.

Rodriguez, P. (1985), Long duration lion roars associated with quasi-perpendicular bow shocks, *J. Geophys. Res.*, *90*, 241–248, doi:10.1029/JA090iA01p00241.

Roeder, J. L., and H. C. Koons (1989), A survey of electron cyclotron waves in the magnetosphere and the diffuse auroral electron precipitation, *J. Geophys. Res.*, *94*, 2529–2541, doi:10.1029/JA094iA03p02529.

Roeder, J. L., H. C. Koons, R. H. Holzworth, R. R. Anderson, and O. H. Bauer (1987), Electron cyclotron harmonic waves observed by the AMPTE-IRM plasma wave experiment following a lithium release in the solar wind, *J. Geophys. Res.*, *92*, 5768–5776, doi:10.1029/JA092iA06p05768.

Rogers, B. N., J. F. Drake, and M. A. Shay (2000), The onset of turbulence in collisionless magnetic reconnection, *Geophys. Res. Lett.*, *27*, 3157–3160, doi:10.1029/2000GL000038.

Romeiras, F. J., and A. L. Brinca (1999), On the stability of perpendicular electrostatic modes in stationary nongyrotropic plasmas, *J. Geophys. Res.*, *104*, 12,407–12,414, doi:10.1029/1999JA900101.

Ronnmark, K. (1983), Computation of the dielectric tensor of a Maxwellian plasma, *Plasma Physics*, *25*, 699–701, doi:10.1088/0032-1028/25/6/007.

Ronnmark, K., H. Borg, P. J. Christiansen, M. P. Gough, and D. Jones (1978), Banded electron cyclotron harmonic instability - A first comparison of theory and experiment, *Space Sci. Rev.*, *22*, 401–417, doi:10.1007/BF00210876.

Roth, I., and S. D. Bale (2006), Heliospheric ion energization due to emerging CME shocks, *J. Geophys. Res.*, *111*, 7–+, doi:10.1029/2005JA011434.

Roth, I., and M. K. Hudson (1992), Analysis of cyclotron harmonic emissions at the outer planets, *Adv. Space Res.*, *12*, 91–94, doi:10.1016/0273-1177(92)90381-7.

Roth, I., M. Temerin, and M. K. Hudson (1999), Resonant enhancement of relativistic electron fluxes during geomagnetically active periods, *Ann. Geophys.*, *17*, 631–638, doi:10.1007/s005850050791.

Roux, A., O. Le Contel, C. Coillot, A. Bouabdellah, B. de La Porte, D. Alison, S. Ruocco, and M. C. Vassal (2008), The Search Coil Magnetometer for THEMIS, *Space Sci. Rev.*, *141*, 265–275, doi:10.1007/s11214-008-9455-8.

Ruan, P., A. Korth, E. Marsch, B. Inhester, S. Solanki, T. Wiegelmann, Q. Zong, R. Bucik, and K. Fornacon (2009), Multiple-spacecraft study of an extended magnetic structure in the solar wind, *J. Geophys. Res.*, *114*, 2108–+, doi:10.1029/2008JA013769.

Russell, C. (2007), Upstream whistler-mode waves at planetary bow shocks: A brief review, *J. Atmos. Solar-Terr. Phys.*, *69*, 1739–1746, doi:10.1016/j.jastp.2006.11.004.

Russell, C. T. (1988), Multipoint measurements of upstream waves, *Adv. Space Res.*, *8*, 147–156, doi:10.1016/0273-1177(88)90125-1.

Russell, C. T., and C. J. Alexander (1984), Multiple spacecraft observations of interplanetary shocks Shock-normal oscillations and their effects, *Adv. Space Res.*, *4*, 277–282, doi:10.1016/0273-1177(84)90321-1.

Russell, C. T., and M. H. Farris (1995), Ultra low frequency waves at the Earth's bow shock, *Adv. Space Res.*, *15*, 285–296, doi:10.1016/S0273-1177(99)80099-4.

Russell, C. T., and M. M. Hoppe (1981), The dependence of upstream wave periods on the interplanetary magnetic field strength, *Geophys. Res. Lett.*, *8*, 615–617, doi:10.1029/GL008i006p00615.

Russell, C. T., and M. M. Hoppe (1983), Upstream waves and particles /Tutorial Lecture/, *Space Sci. Rev.*, *34*, 155–172, doi:10.1007/BF00194624.

Russell, C. T., R. E. Holzer, and E. J. Smith (1969), OGO 3 observations of ELF noise in the magnetosphere. 1. Spatial extent and frequency of occurrence., *J. Geophys. Res.*, *74*, 755–777, doi:10.1029/JA074i003p00755.

Russell, C. T., D. D. Childers, and P. J. Coleman, Jr. (1971), OGO 5 observations of upstream waves in the interplanetary medium: Discrete wave packets., *J. Geophys. Res.*, *76*, 845–861, doi:10.1029/JA076i004p00845.

Russell, C. T., R. L. McPherron, and P. J. Coleman, Jr. (1972), Fluctuating Magnetic Fields in the Magnetosphere. I: ELF and VLF Fluctuations, *Space Sci. Rev.*, *12*, 810–856, doi:10.1007/BF00173072.

Russell, C. T., M. M. Hoppe, and W. A. Livesey (1982a), Overshoots in planetary bow shocks, *Nature*, *296*, 45–48, doi:10.1038/296045a0.

Russell, C. T., M. M. Hoppe, W. A. Livesey, J. T. Gosling, and S. J. Bame (1982b), ISEE-1 and -2 observations of laminar bow shocks - Velocity and thickness, *Geophys. Res. Lett.*, *9*, 1171–1174, doi:10.1029/GL009i010p01171.

Russell, C. T., M. M. Mellott, E. J. Smith, and J. H. King (1983a), Multiple spacecraft observations of interplanetary shocks Four spacecraft determination of shock normals, *J. Geophys. Res.*, *88*, 4739–4748, doi:10.1029/JA088iA06p04739.

Russell, C. T., E. J. Smith, B. T. Tsurutani, J. T. Gosling, and S. J. Bame (1983b), Multiple spacecraft observations of interplanetary shocks: Characteristics of the upstream ULF turbulence, *NASA Conference Publication*, *228*, 385–400.

Russell, C. T., J. T. Gosling, R. D. Zwickl, and E. J. Smith (1983c), Multiple spacecraft observations of interplanetary shocks ISEE three-dimensional plasma measurements, *J. Geophys. Res.*, *88*, 9941–9947, doi:10.1029/JA088iA12p09941.

Russell, C. T., R. C. Snare, J. D. Means, D. Pierce, D. Dearborn, M. Larson, G. Barr, and G. Le (1995), The GGS/POLAR magnetic fields investigation, *Space Sci. Rev.*, *71*, 563–582, doi:10.1007/BF00751341.

Russell, C. T., L. K. Jian, X. Blanco Cano, J. G. Luhmann, and T. L. Zhang (2009a), STEREO observations of shock formation in the solar wind, *Geophys. Res. Lett.*, *36*, 2103–+, doi:10.1029/2008GL036337.

Russell, C. T., L. K. Jian, X. Blanco-Cano, and J. G. Luhmann (2009b), STEREO observations of upstream and downstream waves at low Mach number shocks, *Geophys. Res. Lett.*, *36*, 3106–+, doi:10.1029/2008GL036991.

Russell, C. T., L. K. Jian, H. Wei, L. B. Wilson III, N. Omidi, A. Szabo, and J. G. Luhmann (2012), Long-Period Investigation of Ion Cyclotron Waves in the Solar Wind at 1 AU (Invited), *AOGS-AGU (WPGM) Joint Assembly*, pp. ST29–A015, august 13-17, 2012, Singapore.

Rust, B., and D. Donnelly (2005a), The fast Fourier transform for experimentalists. Part III. Classical spectral analysis, *Computing in Science Engineering*, *7*, 74–78, doi:10.1109/MCSE.2005.103.

Rust, B., and D. Donnelly (2005b), The fast Fourier transform for experimentalists, part IV: autoregressive spectral analysis, *Computing in Science Engineering*, *7*, 85–90, doi:10.1109/MCSE.2005.126.

Ryu, C.-M., T. Rhee, T. Umeda, P. H. Yoon, and Y. Omura (2007), Turbulent acceleration of superthermal electrons, *Phys. Plasmas*, *14*, 100,701–+, doi:10.1063/1.2779282.

Sagdeev, R. Z. (1966), Cooperative Phenomena and Shock Waves in Collisionless Plasmas, *Rev. Plasma Phys.*, *4*, 23–+.

Sagdeev, R. Z. (1979a), The 1976 Oppenheimer lectures: Critical problems in plasma astrophysics. I. Turbulence and nonlinear waves, *Rev. Mod. Phys.*, *51*, 1–10, doi:10.1103/RevModPhys.51.1.

Sagdeev, R. Z. (1979b), The 1976 Oppenheimer lectures: Critical problems in plasma astrophysics. II. Singular layers and reconnection, *Rev. Mod. Phys.*, *51*, 11–20, doi:10.1103/RevModPhys.51.11.

Sagdeev, R. Z., V. I. Stonikov, V. D. Shapiro, and V. I. Shevchenko (1977), Contribution to the theory of magnetosonic turbulence, *Sov. Phys.–JETP*, *26*, 582–+.

Sagdeev, R. Z., V. D. Shapiro, V. I. Shevchenko, and K. Szego (1987), The effect of mass loading outside cometary bow shock for the plasma and wave measurements in the coming cometary missions, *J. Geophys. Res.*, *92*, 1131–1137, doi:10.1029/JA092iA02p01131.

Sahraoui, F., J. L. Pinçon, G. Belmont, L. Rezeau, N. Cornilleau-Wehrlin, P. Robert, L. Mellul, J. M. Bosqued, A. Balogh, P. Canu, and G. Chanteur (2003), ULF wave identification in the magnetosheath: The k-filtering technique applied to Cluster II data, *J. Geophys. Res.*, *108*, 1335–+, doi:10.1029/2002JA009587.

Saito, S., and S. P. Gary (2007), Whistler scattering of suprathermal electrons in the solar wind: Particle-in-cell simulations, *J. Geophys. Res.*, *112*, 6116–+, doi:10.1029/2006JA012216.

Saito, S., and T. Umeda (2011), Suppression of Reflected Electrons by Kinetic Alfvén Turbulence in a Quasi-perpendicular Shock: Particle-in-cell Simulations, *Astrophys. J.*, *736*, 35–+, doi:10.1088/0004-637X/736/1/35.

Saito, S., S. P. Gary, H. Li, and Y. Narita (2008), Whistler turbulence: Particle-in-cell simulations, *Phys. Plasmas*, *15*, 102,305–+, doi:10.1063/1.2997339.

Saito, Y., T. Mukai, T. Terasawa, A. Nishida, S. Machida, M. Hirahara, K. Maezawa, S. Kokubun, and T. Yamamoto (1995), Slow-mode shocks in the magnetotail, *J. Geophys. Res.*, *100*, 23,567–23,582, doi:10.1029/95JA01675.

Sakurai, T., and T. Hashizume (1986), Determination of the detection efficiency of a channelplate electron multiplier, *Rev. Sci. Inst.*, *57*, 236–239, doi:10.1063/1.1138976.

Salem, C., D. Hubert, C. Lacombe, S. D. Bale, A. Mangeney, D. E. Larson, and R. P. Lin (2003), Electron Properties and Coulomb Collisions in the Solar Wind at 1 AU: Wind Observations, *Astrophys. J.*, *585*, 1147–1157, doi:10.1086/346185.

Samson, J. C., and J. V. Olson (1980), Some comments on the descriptions of the polarization states of waves, *Geophysical Journal International*, *61*, 115–129, doi:10.1111/j.1365-246X.1980.tb04308.x.

Sanderson, T. R., R. Reinhard, K.-P. Wenzel, E. C. Roelof, and E. J. Smith (1983), Observations of upstream ions and low-frequency waves on ISEE 3, *J. Geophys. Res.*, *88*, 85–95, doi:10.1029/JA088iA01p00085.

Sanderson, T. R., R. Reinhard, P. van Nes, K.-P. Wenzel, E. J. Smith, and B. T. Tsurutani (1985), Observations of 35- 10 1600-keV protons and low-frequency waves upstream of interplanetary shocks, *J. Geophys. Res.*, *90*, 3973–3980, doi:10.1029/JA090iA05p03973.

Sanderson, T. R., J. P. G. Henrion, K.-P. Wenzel, R. P. Lin, K. A. Anderson, S. Ashford, C. W. Carlson, D. Curtis, R. E. Ergun, D. Larson, J. McFadden, H. Reme, J. M. Bosqued, J. Coutelier, F. Cotin, N. Lormant, C. d'Uston, G. K. Parks, M. P. McCarthy, R. M. Skoug, and R. M. Winglee (1996), WIND observations of energetic ions far upstream of the Earth's bow-shock, *Geophys. Res. Lett.*, *23*, 1215–1218, doi:10.1029/96GL01359.

Santolík, O. (2008), New results of investigations of whistler-mode chorus emissions, *Nonlin. Proc. Geophys.*, *15*, 621–630.

Santolík, O., M. Parrot, L. R. O. Storey, J. S. Pickett, and D. A. Gurnett (2001), Propagation analysis of plasmaspheric hiss using Polar PWI measurements, *Geophys. Res. Lett.*, *28*, 1127–1130, doi:10.1029/2000GL012239.

Santolík, O., D. A. Gurnett, J. S. Pickett, M. Parrot, and N. Cornilleau-Wehrlin (2003), Spatio-temporal structure of storm-time chorus, *J. Geophys. Res.*, *108*, 1278–+, doi:10.1029/2002JA009791.

Santolík, O., D. Gurnett, and J. Pickett (2004), Multipoint investigation of the source region of storm-time chorus, *Ann. Geophys.*, *22*, 2555–2563.

Santolík, O., D. A. Gurnett, J. S. Pickett, M. Parrot, and N. Cornilleau-Wehrlin (2005), Central position of the source region of storm-time chorus, *Planet. Space Sci.*, *53*, 299–305, doi:10.1016/j.pss.2004.09.056.

Santolík, O., J. Chum, M. Parrot, D. A. Gurnett, J. S. Pickett, and N. Cornilleau-Wehrlin (2006), Propagation of whistler mode chorus to low altitudes: Spacecraft observations of structured ELF hiss, *J. Geophys. Res.*, *111*, 10,208–+, doi:10.1029/2005JA011462.

Santolík, O., D. A. Gurnett, J. S. Pickett, J. Chum, and N. Cornilleau-Wehrlin (2009), Oblique propagation of whistler mode waves in the chorus source region, *J. Geophys. Res.*, *114*, A00F03, doi:10.1029/2009JA014586.

Santolík, O., J. S. Pickett, D. A. Gurnett, J. D. Menietti, B. T. Tsurutani, and O. Verkhoglyadova (2010a), Survey of Poynting flux of whistler mode chorus in the outer zone, *J. Geophys. Res.*, *115*, 0–+, doi:10.1029/2009JA014925.

Santolík, O., D. A. Gurnett, J. S. Pickett, S. Grimald, P. M. E. Décreau, M. Parrot, N. Cornilleau-Wehrlin, F. El-Lemdani Mazouz, D. Schriver, N. P. Meredith, and A. Fazakerley (2010b), Wave-particle interactions in the equitorial source region of whistler-mode emissions, *J. Geophys. Res.*, *115*, A00F16–+, doi:10.1029/2009JA015218.

Sauer, K., and R. D. Sydora (2010), Beam-excited whistler waves at oblique propagation with relation to STEREO radiation belt observations, *Ann. Geophys.*, *28*, 1317–1325.

Sauer, K., E. Dubinin, and J. F. McKenzie (2002), Wave emission by whistler oscillitons: Application to "coherent lion roars", *Geophys. Res. Lett.*, *29*, 2226, doi:10.1029/2002GL015771.

Savin, S., G. Avanesova, M. Balikhin, D. Wozniak, P. Wronowski, S. Klimov, Z. Krawczyk, M. Nozdrachev, D. Orlowski, A. Sokolov, and J. Juchniewicz (1987), Comparative Study of the Low Frequency Waves Near Comet p/ Halley during the VEGA-1 and VEGA-2 Flybys, *Astron. & Astrophys.*, *187*, 89–+.

Savoini, P., and B. Lembège (1995), Heating and acceleration of electrons through the whistler precursor in 1-D and 2-D oblique shocks, *Adv. Space Res.*, *15*, 235–238, doi:10.1016/0273-1177(94)00103-8.

Savoini, P., B. Lembège, V. Krasnosselskhik, and Y. Kuramitsu (2005), Under and over-adiabatic electrons through a perpendicular collisionless shock: theory versus simulations, *Ann. Geophys.*, *23*, 3685–3698.

Saxena, M. K. (1982), Decay of the lower-hybrid wave into an ion cyclotron mode and a whistler wave, *J. Plasma Phys.*, *28*, 149–+, doi:10.1017/S0022377800000155.

Saxena, R., S. D. Bale, and T. S. Horbury (2005), Wavelength and decay length of density overshoot structure in supercritical, collisionless bow shocks, *Phys. Plasmas*, *12*(5), 052,904–+, doi:10.1063/1.1900093.

Scarf, F. L., and L. M. Noble (1965), Conductive Heating of the Solar Wind. II. The Inner Corona., *Astrophys. J.*, *141*, 1479–+, doi:10.1086/148236.

Scarf, F. L., W. Bernstein, and R. W. Fredricks (1965), Electron Acceleration and Plasma Instabilities in the Transition Region, *J. Geophys. Res.*, *70*, 9–20, doi:10.1029/JZ070i001p00009.

Scarf, F. L., L. A. Frank, K. L. Ackerson, and R. P. Lepping (1974), Plasma wave turbulence at distant crossings of the plasma sheet boundaries and the neutral sheet., *Geophys. Res. Lett.*, *1*, 189–192, doi:10.1029/GL001i005p00189.

Scarf, F. L., F. V. Coroniti, D. A. Gurnett, and W. S. Kurth (1979), Pitch-angle diffusion by whistler mode waves near the Io plasma torus, *Geophys. Res. Lett.*, *6*, 653–656, doi:10.1029/GL006i008p00653.

Schecker, J. A., M. M. Schauer, K. Holzscheiter, and M. H. Holzscheiter (1992), The performance of a microchannel plate at cryogenic temperatures and in high magnetic fields, and the detection efficiency for low energy positive hydrogen ions, *Nucl. Inst. & Meth. in Phys. Res. A*, *320*, 556–561, doi:10.1016/0168-9002(92)90950-9.

Schmitz, H., S. C. Chapman, and R. O. Dendy (2002a), The Influence of Electron Temperature and Magnetic Field Strength on Cosmic-Ray Injection in High Mach Number Shocks, *Astrophys. J.*, *570*, 637–646, doi:10.1086/339787.

Schmitz, H., S. C. Chapman, and R. O. Dendy (2002b), Electron Preacceleration Mechanisms in the Foot Region of High Alfvénic Mach Number Shocks, *Astrophys. J.*, *579*, 327–336, doi:10.1086/341733.

Scholer, M. (1993), Upstream waves, shocklets, short large-amplitude magnetic structures and the cyclic behavior of oblique quasi-parallel collisionless shocks, *J. Geophys. Res.*, *98*, 47–57, doi:10.1029/92JA01875.

Scholer, M. (1995), Interaction of upstream diffuse ions with the solar wind, *Adv. Space Res.*, *15*, 125–135, doi:10.1016/0273-1177(94)00094-H.

Scholer, M., and J. W. Belcher (1971), The Effect of Alfvén Waves on MHD Fast Shocks, *Solar Phys.*, *16*, 472–483, doi:10.1007/BF00162490.

Scholer, M., and D. Burgess (1992), The role of upstream waves in supercritical quasi-parallel shock re-formation, *J. Geophys. Res.*, *97*, 8319–8326, doi:10.1029/92JA00312.

Scholer, M., and D. Burgess (2007), Whistler waves, core ion heating, and nonstationarity in oblique collisionless shocks, *Phys. Plasmas*, *14*, 072,103–+, doi:10.1063/1.2748391.

Scholer, M., and M. Fujimoto (1993), Low-Mach number quasi-parallel shocks - Upstream waves, *J. Geophys. Res.*, *98*, 15,275–+, doi:10.1029/93JA01155.

Scholer, M., and S. Matsukiyo (2004), Nonstationarity of quasi-perpendicular shocks: a comparison of full particle simulations with different ion to electron mass ratio, *Ann. Geophys.*, *22*, 2345–2353.

Scholer, M., and S. Matsukiyo (2005), On Kinetic Structure of Quasi-Perpendicular Collisionless Shocks, in *The Physics of Collisionless Shocks: 4th Annual IGPP International Astrophysics Conference*, *American Institute of Physics Conference Series*, vol. 781, edited by G. Li, G. P. Zank, and C. T. Russell, pp. 22–26, doi:10.1063/1.2032669.

Scholer, M., M. Fujimoto, and H. Kucharek (1993), Two-dimensional simulations of supercritical quasi-parallel shocks: upstream waves, downstream waves, and shock re-formation, *J. Geophys. Res.*, *98*, 18,971–+, doi:10.1029/93JA01647.

Scholer, M., H. Kucharek, V. V. Krasnosselskikh, and K. Trattner (2000), Injection and acceleration of ions at collisionless shocks: Kinetic simulations, in *Acceleration and Transport of Energetic Particles Observed in the Heliosphere*, *American Institute of Physics Conference Series*, vol. 528, edited by R. A. Mewaldt, J. R. Jokipii, M. A. Lee, E. Möbius, & T. H. Zurbuchen , pp. 250–257, doi:10.1063/1.1324320.

Scholer, M., I. Shinohara, and S. Matsukiyo (2003a), Quasi-perpendicular shocks: Length scale of the cross-shock potential, shock reformation, and implication for shock surfing, *J. Geophys. Res.*, *108*, 1014–+, doi:10.1029/2002JA009515.

Scholer, M., H. Kucharek, and I. Shinohara (2003b), Short large-amplitude magnetic structures and whistler wave precursors in a full-particle quasi-parallel shock simulation, *J. Geophys. Res.*, *108*, 1273–+, doi:10.1029/2002JA009820.

Scholer, M., I. Sidorenko, C. H. Jaroschek, R. A. Treumann, and A. Zeiler (2003c), Onset of collisionless magnetic reconnection in thin current sheets: Three-dimensional particle simulations, *Phys. Plasmas*, *10*, 3521–3527, doi:10.1063/1.1597494.

Schriver, D., M. Ashour-Abdalla, F. V. Coroniti, J. N. LeBoeuf, V. Decyk, P. Travnicek, O. Santolík, D. Winningham, J. S. Pickett, M. L. Goldstein, and A. N. Fazakerley (2010), Generation of whistler mode emissions in the inner magnetosphere: An event study, *J. Geophys. Res.*, *115*, A00F17–+, doi:10.1029/2009JA014932.

Schwadron, N. A., L. A. Fisk, and G. Gloeckler (1996), Statistical acceleration of interstellar pick-up ions in co-rotating interaction regions, *Geophys. Res. Lett.*, *23*, 2871–2874, doi:10.1029/96GL02833.

Schwartz, S. J. (1991), Magnetic field structures and related phenomena at quasi-parallel shocks, *Adv. Space Res.*, *11*, 231–240, doi:10.1016/0273-1177(91)90039-M.

Schwartz, S. J. (2006), Shocks: Commonalities in Solar-Terrestrial Chains, *Space Sci. Rev.*, *124*, 333–344, doi:10.1007/s11214-006-9093-y.

Schwartz, S. J., and D. Burgess (1984), On the theoretical/observational comparison of field-aligned ion beams in the earth's foreshock, *J. Geophys. Res.*, *89*, 2381–2384, doi:10.1029/JA089iA04p02381.

Schwartz, S. J., and D. Burgess (1991), Quasi-parallel shocks - A patchwork of three-dimensional structures, *Geophys. Res. Lett.*, *18*, 373–376, doi:10.1029/91GL00138.

Schwartz, S. J., and E. Marsch (1983), The radial evolution of a single solar wind plasma parcel, *J. Geophys. Res.*, *88*, 9919–9932, doi:10.1029/JA088iA12p09919.

Schwartz, S. J., M. F. Thomsen, and J. T. Gosling (1983), Ions upstream of the earth's bow shock - A theoretical comparison of alternative source populations, *J. Geophys. Res.*, *88*, 2039–2047, doi:10.1029/JA088iA03p02039.

Schwartz, S. J., M. F. Thomsen, S. J. Bame, and J. Stansberry (1988), Electron heating and the potential jump across fast mode shocks, *J. Geophys. Res.*, *93*, 12,923–12,931, doi:10.1029/JA093iA11p12923.

Schwartz, S. J., D. Burgess, W. P. Wilkinson, R. L. Kessel, M. Dunlop, and H. Luehr (1992), Observations of short large-amplitude magnetic structures at a quasi-parallel shock, *J. Geophys. Res.*, *97*, 4209–4227, doi:10.1029/91JA02581.

Schwartz, S. J., D. Burgess, and J. J. Moses (1996), Low-frequency waves in the Earthś magnetosheath: present status, *Ann. Geophys.*, *14*, 1134–1150, doi:10.1007/s005850050376.

Schwartz, S. J., D. Sibeck, M. Wilber, K. Meziane, and T. S. Horbury (2006), Kinetic aspects of foreshock cavities, *Geophys. Res. Lett.*, *33*, 12,103–+, doi:10.1029/2005GL025612.

Schwartz, S. J., E. Henley, J. Mitchell, and V. Krasnoselskikh (2011), Electron Temperature Gradient Scale at Collisionless Shocks, *Phys. Rev. Lett.*, *107*, 215,002, doi:10.1103/PhysRevLett.107.215002.

Schwenn, R. (2006), Space Weather: The Solar Perspective, *Living Reviews in Solar Physics*, *3*, 2–+.

Scime, E. E., J. E. Littleton, S. P. Gary, R. Skoug, and N. Lin (2001), Solar cycle variations in the electron heat flux: Ulysses observations, *Geophys. Res. Lett.*, *28*, 2169–2172, doi:10.1029/2001GL012925.

Sckopke, N., G. Paschmann, S. J. Bame, J. T. Gosling, and C. T. Russell (1983), Evolution of ion distributions across the nearly perpendicular bow shock - Specularly and non-specularly reflected-gyrating ions, *J. Geophys. Res.*, *88*, 6121–6136, doi:10.1029/JA088iA08p06121.

Sckopke, N., G. Paschmann, A. L. Brinca, C. W. Carlson, and H. Luehr (1990), Ion thermalization in quasi-perpendicular shocks involving reflected ions, *J. Geophys. Res.*, *95*, 6337–6352, doi:10.1029/JA095iA05p06337.

Scudder, J., F. Hunsacker, G. Miller, J. Lobell, T. Zawistowski, K. Ogilvie, J. Keller, D. Chornay, F. Herrero, R. Fitzenreiter, D. Fairfield, J. Needell, D. Bodet, J. Googins, C. Kletzing, R. Torbert, J. Vandiver, R. Bentley, W. Fillius, C. McIlwain, E. Whipple, and A. Korth (1995), Hydra - A 3-dimensional electron and ion hot plasma instrument for the POLAR spacecraft of the GGS mission, *Space Sci. Rev.*, *71*, 459–495, doi:10.1007/BF00751338.

Scudder, J. D. (1992a), On the causes of temperature change in inhomogeneous low-density astrophysical plasmas, *Astrophys. J.*, *398*, 299–318, doi:10.1086/171858.

Scudder, J. D. (1992b), Why all stars should possess circumstellar temperature inversions, *Astrophys. J.*, *398*, 319–349, doi:10.1086/171859.

Scudder, J. D. (1995), A review of the physics of electron heating at collisionless shocks, *Adv. Space Res.*, *15*, 181–223, doi:10.1016/0273-1177(94)00101-6.

Scudder, J. D. (1996), Comment on "Demagnetization of electrons in inhomogeneous E⊥B: Implications for electron heating in shocks" by M. Gedalin et al., *J. Geophys. Res.*, *101*, 2561–2566, doi:10.1029/95JA03187.

Scudder, J. D., T. L. Aggson, A. Mangeney, C. Lacombe, and C. C. Harvey (1986a), The resolved layer of a collisionless, high beta, supercritical, quasi-perpendicular shock wave. I - Rankine-Hugoniot geometry, currents, and stationarity, *J. Geophys. Res.*, *91*, 11,019–11,052, doi:10.1029/JA091iA10p11019.

Scudder, J. D., T. L. Aggson, A. Mangeney, C. Lacombe, and C. C. Harvey (1986b), The resolved layer of a collisionless, high beta, supercritical, quasi-perpendicular shock wave. II - Dissipative fluid electrodynamics, *J. Geophys. Res.*, *91*, 11,053–11,073, doi:10.1029/JA091iA10p11053.

Scudder, J. D., A. Mangeney, C. Lacombe, C. C. Harvey, and C. S. Wu (1986c), The resolved layer of a collisionless, high beta, supercritical, quasi-perpendicular shock wave. III - Vlasov electrodynamics, *J. Geophys. Res.*, *91*, 11,075–11,097, doi:10.1029/JA091iA10p11075.

Seki, Y., M. N. Nishino, M. Fujimoto, Y. Miyashita, K. Keika, H. Hasegawa, K. Okabe, Y. Kasaba, T. Terasawa, T. I. Yamamoto, I. Shinohara, Y. Saito, and T. Mukai (2009), Observations of loss cone-shaped back streaming energetic protons upstream of the Earth's bow shock, *J. Geophys. Res.*, *114*, 11,106–+, doi:10.1029/2009JA014136.

Sentman, D. D., C. F. Kennel, L. A. Frank, D. A. Gurnett, and W. S. Kurth (1979), Electron distribution functions associated with electrostatic emissions in the dayside magnetosphere, *Geophys. Res. Lett.*, *6*, 781–784, doi:10.1029/GL006i010p00781.

Sentman, D. D., C. F. Kennel, and L. A. Frank (1981), Plasma rest frame distributions of suprathermal ions in the earth's foreshock region, *J. Geophys. Res.*, *86*, 4365–4373, doi:10.1029/JA086iA06p04365.

Sentman, D. D., M. M. Hoppe, M. F. Thomsen, S. P. Gary, and W. C. Feldman (1983), The oblique whistler instability in the earth's foreshock, *J. Geophys. Res.*, *88*, 2048–2056, doi:10.1029/JA088iA03p02048.

Seyler, C. E. (1994), Lower hybrid wave phenomena associated with density depletions, *J. Geophys. Res.*, *99*, 19,513–+, doi: 10.1029/94JA01572.

Shapiro, V. D., and R. Z. Sagdeev (1997), Nonlinear wave-particle interaction and conditions for the applicability of quasilinear theory, *Phys. Rep.*, *283*, 49–71, doi:10.1016/S0370-1573(96)00053-1.

Shapiro, V. D., and D. Üçer (2003), Shock surfing acceleration, *Planet. Space Sci.*, *51*, 665–680.

Shapiro, V. D., V. I. Shevchenko, G. I. Solov'ev, V. P. Kalinin, R. Bingham, R. Z. Sagdeev, M. Ashour-Abdalla, J. Dawson, and J. J. Su (1993), Wave collapse at the lower-hybrid resonance, *Phys. Fluids B*, *5*, 3148–3162, doi:10.1063/1.860652.

Shapiro, V. D., V. I. Shevchenko, P. J. Cargill, and K. Papadopoulos (1994), Modulational instability of lower hybrid waves at the magnetopause, *J. Geophys. Res.*, *99*, 23,735–+, doi:10.1029/94JA02074.

Shapiro, V. D., R. Bingham, J. M. Dawson, Z. Dobe, B. J. Kellett, and D. A. Mendis (1999), Energetic electrons produced by lower hybrid waves in the cometary environment and soft X ray emission: Bremsstrahlung and K shell radiation, *J. Geophys. Res.*, *104*, 2537–2554, doi:10.1029/1998JA900047.

Shapiro, V. D., M. A. Lee, and K. B. Quest (2001), Role of lower hybrid turbulence in surfing acceleration at perpendicular shocks, *J. Geophys. Res.*, *106*, 25,023–25,030, doi: 10.1029/1999JA000384.

Shaw, R. R., and D. A. Gurnett (1975), Electrostatic noise bands associated with the electron gyrofrequency and plasma frequency in the outer magnetosphere, *J. Geophys. Res.*, *80*, 4259–4271, doi:10.1029/JA080i031p04259.

Shelley, E. G., A. G. Ghielmetti, H. Balsiger, R. K. Black, J. A. Bowles, R. P. Bowman, O. Bratschi, J. L. Burch, C. W. Carlson, A. J. Coker, J. F. Drake, J. Fischer, J. Geiss, A. Johnstone, D. L. Kloza, O. W. Lennartsson, A. L. Magoncelli, G. Paschmann, W. K. Peterson, H. Rosenbauer, T. C. Sanders, M. Steinacher, D. M. Walton, B. A. Whalen, and D. T. Young (1995), The Toroidal Imaging Mass-Angle Spectrograph (TIMAS) for the Polar Mission, *Space Sci. Rev.*, *71*, 497–530, doi:10.1007/BF00751339.

Sherwell, D., and R. A. Cairns (1978), A model for precursor structure in supercritical prependicular collisionless shock waves., *J. Plasma Phys.*, *20*, 265–+, doi: 10.1017/S0022377800021541.

Shimada, N., and M. Hoshino (2000), Strong Electron Acceleration at High Mach Number Shock Waves: Simulation Study of Electron Dynamics, *Astrophys. J.*, *543*, L67–L71, doi: 10.1086/318161.

Shimada, N., and M. Hoshino (2003), The dynamics of electron-ion coupling in the shock transition region, *Phys. Plasmas*, *10*, 1113–1119, doi:10.1063/1.1557911.

Shimada, N., and M. Hoshino (2004), Electron heating and acceleration in the shock transition region: Background plasma parameter dependence, *Phys. Plasmas*, *11*, 1840–1849, doi: 10.1063/1.1652060.

Shimada, N., and M. Hoshino (2005), Effect of strong thermalization on shock dynamical behavior, *J. Geophys. Res.*, *110*, 2105–+, doi:10.1029/2004JA010596.

Shimada, N., T. Terasawa, and J. R. Jokipii (1997), Stochastic particle acceleration by a pair of slow shocks, *J. Geophys. Res.*, *102*, 22,301–22,310, doi:10.1029/97JA02032.

Shimada, N., T. Terasawa, M. Hoshino, T. Naito, H. Matsui, T. Koi, and K. Maezawa (1998), Diffusive Shock Acceleration of Electrons at an Interplanetary Shock Observed on 21 Feb 1994, *Astrophys. Space Sci.*, *264*, 481–488, doi: 10.1023/A:1002499513777.

Shimada, N., T. Terasawa, M. Hoshino, T. Naito, H. Matsui, T. Koi, and K. Maezawa (1999), Diffusive Shock Acceleration of Electrons at an Interplanetary Shock Observed on 21 Feb 1994, *Astrophys. Space Sci.*, *264*, 481–488.

Shin, K., H. Kojima, H. Matsumoto, and T. Mukai (2008), Characteristics of electrostatic solitary waves in the Earth's foreshock region: Geotail observations, *J. Geophys. Res.*, *113*, 3101–+, doi:10.1029/2007JA012344.

Shinohara, I., and M. Hoshino (1999), Electron heating process of the lower hybrid drift instability, *Adv. Space Res.*, *24*, 43–46, doi:10.1016/S0273-1177(99)00420-2.

Shinohara, I., T. Nagai, M. Fujimoto, T. Terasawa, T. Mukai, K. Tsuruda, and T. Yamamoto (1998), Low-frequency electromagnetic turbulence observed near the substorm onset site, *J. Geophys. Res.*, *103*, 20,365–20,388, doi:10.1029/98JA01104.

Shu, F. H. (1992), *Physics of Astrophysics, Vol. II*, University Science Books, ISBN 0-935702-65-2.

Sibeck, D. G., and V. Angelopoulos (2008), THEMIS Science Objectives and Mission Phases, *Space Sci. Rev.*, *141*, 35–59, doi:10.1007/s11214-008-9393-5.

Sigsbee, K., J. D. Menietti, O. Santolík, and J. S. Pickett (2010), Locations of chorus emissions observed by the Polar Plasma Wave Instrument, *J. Geophys. Res.*, *115*, A00F12, doi: 10.1029/2009JA014579.

Silin, I., J. Büchner, and A. Vaivads (2005), Anomalous resistivity due to nonlinear lower-hybrid drift waves, *Phys. Plasmas*, *12*(6), 062,902–+, doi:10.1063/1.1927096.

Simões, F. J. R., M. V. Alves, and R. Gaelzer (2010), One-dimenssional electromagnetic simulation of multiple electron beams propagating in space plasmas, *J. Geophys. Res.*, *115*, 6105–+, doi:10.1029/2009JA014841.

Singh, N., J. R. Conrad, and R. W. Schunk (1985), Electrostatic ion cyclotron, beam-plasma, and lower hybrid waves excited by an electron beam, *J. Geophys. Res.*, *90*, 5159–5172, doi: 10.1029/JA090iA06p05159.

Singh, N., M. Yeladandi, T. Somarothu, and B. E. Wells (2010), Features of electron current layers: Comparison between three-dimensional particle-in-cell simulations and Cluster observations, *J. Geophys. Res.*, *115*, 4203–+, doi: 10.1029/2009JA014601.

Singh, R. P. (1972), Amplification of signal by Cerenkov resonance interaction, *Planet. Space Sci.*, *20*, 2073–+, doi: 10.1016/0032-0633(72)90063-3.

Sironi, L., and A. Spitkovsky (2011), Particle Acceleration in Relativistic Magnetized Collisionless Electron-Ion Shocks, *Astrophys. J.*, *726*, 75–+, doi:10.1088/0004-637X/726/2/75.

Siscoe, G., and R. Schwenn (2006), CME Disturbance Forecasting, *Space Sci. Rev.*, *123*, 453–470, doi:10.1007/s11214-006-9024-y.

Siscoe, G. L., N. U. Crooker, and H. A. Elliott (2006), Initial-Condition Influences on CME Expansion and Propagation, *Solar Phys.*, *239*, 293–316, doi:10.1007/s11207-006-0302-3.

Slavin, J. A., and R. E. Holzer (1981), Solar wind flow about the terrestrial planets. I - Modeling bow shock position and shape, *J. Geophys. Res.*, *86*, 11,401–11,418, doi: 10.1029/JA086iA13p11401.

Smirnov, V. N., and O. L. Vaisberg (1995), Further analysis of non-linear density fluctuations in the foot of quasi-perpendicular shock, *Adv. Space Res.*, *15*, 297–310, doi: 10.1016/0273-1177(94)00109-E.

Smith, A. J., and P. J. Jenkins (1998), A survey of natural electromagnetic noise in the frequency range f = 1-10 kHz at Halley station, Antarctica: 1. Radio atmospherics from lightning, *Journal of Atmospheric and Solar-Terrestrial Physics*, *60*, 263–277, doi:10.1016/S1364-6826(97)00057-6.

Smith, C. W. (1989), Anisotropy of shock-accelerated ion distributions in interplanetary space, *J. Geophys. Res.*, *94*, 5474–5478, doi:10.1029/JA094iA05p05474.

Smith, C. W., and S. P. Gary (1987), Electromagnetic ion beam instabilities - Growth at cyclotron harmonic wave numbers, *J. Geophys. Res.*, *92*, 117–125, doi:10.1029/JA092iA01p00117.

Smith, C. W., M. L. Goldstein, and H. K. Wong (1989), Whistler wave bursts upstream of the Uranian bow shock, *J. Geophys. Res.*, *94*, 17,035–17,048, doi:10.1029/JA094iA12p17035.

Smith, C. W., H. K. Wong, and M. L. Goldstein (1991), Whistler waves associated with the Uranian bow shock - Outbound observations, *J. Geophys. Res.*, *96*, 15,841–+, doi: 10.1029/91JA01460.

Smith, E. J., and B. T. Tsurutani (1976), Magnetosheath lion roars, *J. Geophys. Res.*, *81*, 2261–2266, doi: 10.1029/JA081i013p02261.

Smith, R. L., and R. A. Helliwell (1960), Electron Densities to 5 Earth Radii Deduced from Nose Whistlers, *J. Geophys. Res.*, *65*, 2583–+, doi:10.1029/JZ065i009p02583.

Smith, R. L., R. A. Helliwell, and I. W. Yabroff (1960), A Theory of Trapping of Whistlers in Field-Aligned Columns of Enhanced Ionization, *J. Geophys. Res.*, *65*, 815–+, doi: 10.1029/JZ065i003p00815.

Sodha, M. S., R. R. Sharma, and V. K. Tripathi (1980), Nonlinear scattering of whistlers by lower hybrid and ion Bernstein modes, *J. Plasma Phys.*, *23*, 141–146, doi:10.1017/S0022377800022200.

Solomon, J., N. Cornilleau-Wehrlin, P. Canu, D. Lengyel-Frey, S. J. Bame, E. E. Scime, A. Balogh, and R. J. Forsyth (1995), Interaction Between Whistler-Mode Waves and Electrons in the Vicinity of Interplanetary Shocks as Seen by Ulysses: A Preliminary Study, *Space Sci. Rev.*, *72*, 181–184, doi:10.1007/BF00768775.

Sonett, C. P., D. S. Colburn, L. Davis, E. J. Smith, and P. J. Coleman (1964), Evidence for a Collision-Free Magnetohydrodynamic Shock in Interplanetary Space, *Phys. Rev. Lett.*, *13*, 153–156, doi:10.1103/PhysRevLett.13.153.

Song, Y., and R. L. Lysak (2006), Displacement Current and the Generation of Parallel Electric Fields, *Phys. Rev. Lett.*, *96*(14), 145,002–+, doi:10.1103/PhysRevLett.96.145002.

Sonnerup, B. U. Ö. (1971a), Magnetopause structure during the magnetic storm of September 24, 1961., *J. Geophys. Res.*, *76*, 6717–6735, doi:10.1029/JA076i028p06717.

Sonnerup, B. U. Ö. (1971b), Adiabatic particle orbits in a magnetic null sheet., *J. Geophys. Res.*, *76*, 8211–8222, doi:10.1029/JA076i034p08211.

Sonnerup, B. U. O., E. J. Smith, B. T. Tsurutani, and J. H. Wolfe (1981), Structure of Jupiter's magnetopause - Pioneer 10 and 11 observations, *J. Geophys. Res.*, *86*, 3321–3334, doi:10.1029/JA086iA05p03321.

Soucek, J., V. Krasnoselskikh, T. Dudok de Wit, J. Pickett, and C. Kletzing (2005), Nonlinear decay of foreshock Langmuir waves in the presence of plasma inhomogeneities: Theory and Cluster observations, *J. Geophys. Res.*, *110*, 8102–+, doi:10.1029/2004JA010977.

Soucek, J., O. Santolík, T. Dudok de Wit, and J. S. Pickett (2009), Cluster multispacecraft measurement of spatial scales of foreshock Langmuir waves, *J. Geophys. Res.*, *114*, 2213–+, doi:10.1029/2008JA013770.

Spangler, S. R. (2009), Joule heating and anomalous resistivity in the solar corona, *Nonlinear Processes in Geophysics*, *16*, 443–452.

Spitzer, L. (1963), Physics of Fully Ionized Gases, *Amer. J. Phys.*, *31*, 890–891, doi:10.1119/1.1969155.

Spitzer, L., and T. T. Arny (1978), Physical Processes in the Interstellar Medium, *Amer. J. Phys.*, *46*, 1201–1201, doi:10.1119/1.11466.

Spitzer, L., and R. Härm (1953), Transport Phenomena in a Completely Ionized Gas, *Phys. Rev.*, *89*, 977–981, doi:10.1103/PhysRev.89.977.

Spitzer, L., Jr. (1952), Equations of Motion for an Ideal Plasma., *Astrophys. J.*, *116*, 299–+, doi:10.1086/145614.

Spitzer, L. J. (1960), Particle Diffusion across a Magnetic Field, *Phys. Fluids*, *3*, 659–661, doi:10.1063/1.1706104.

Starodubtsev, M., and C. Krafft (1999a), Whistler excitation by short current pulses in a magnetoplasma, *Phys. Plasmas*, *6*, 2598–2606, doi:10.1063/1.873531.

Starodubtsev, M., and C. Krafft (1999b), Resonant Cyclotron Emission of Whistler Waves by a Modulated Electron Beam, *Phys. Rev. Lett.*, *83*, 1335–1338, doi:10.1103/PhysRevLett.83.1335.

Starodubtsev, M., C. Krafft, P. Thévenet, and A. Kostrov (1999a), Whistler wave emission by a modulated electron beam through transition radiation, *Phys. Plasmas*, *6*, 1427–1434, doi:10.1063/1.873393.

Starodubtsev, M., C. Krafft, B. Lundin, and P. Thévenet (1999b), Resonant Cherenkov emission of whistlers by a modulated electron beam, *Phys. Plasmas*, *6*, 2862–2869, doi:10.1063/1.873244.

Stasiewicz, K. (2004), Reinterpretation of mirror modes as trains of slow magnetosonic solitons, *Geophys. Res. Lett.*, *31*, 21,804–+, doi:10.1029/2004GL021282.

Stasiewicz, K., M. Longmore, S. Buchert, P. K. Shukla, B. Lavraud, and J. Pickett (2003), Properties of fast magnetosonic shocklets at the bow shock, *Geophys. Res. Lett.*, *30*, 240,000–1, doi:10.1029/2003GL017971.

Stawarz, J. E., C. W. Smith, B. J. Vasquez, M. A. Forman, and B. T. MacBride (2009), The Turbulent Cascade and Proton Heating in the Solar Wind at 1 AU, *Astrophys. J.*, *697*, 1119–1127, doi:10.1088/0004-637X/697/2/1119.

Stenzel, R. L., and B. H. Ripin (1973), Growth and Saturation of the Absolute Electron-Cyclotron Drift Instability, *Phys. Rev. Lett.*, *31*, 1545–1548, doi:10.1103/PhysRevLett.31.1545.

Stepanov, A. V., T. Yokoyama, K. Shibasaki, and V. F. Melnikov (2007), Turbulent propagation of high-energy electrons in a solar coronal loop, *Astron. & Astrophys.*, *465*, 613–619, doi:10.1051/0004-6361:20066573.

Stix, T. H. (1960), Absorption of Plasma Waves, *Phys. Fluids*, *3*, 19–32, doi:10.1063/1.1705997.

Stix, T. H. (1962), *The Theory of Plasma Waves*, McGraw-Hill.

Stix, T. H. (1992), *Waves in plasmas*, Springer.

Stone, P. M., and P. L. Auer (1965), Excitation of Electrostatic Waves Near Electron Cyclotron Harmonic Frequencies, *Phys. Rev.*, *138*, 695–700, doi:10.1103/PhysRev.138.A695.

Stone, R. G., J. L. Bougeret, J. Caldwell, P. Canu, Y. de Conchy, N. Cornilleau-Wehrlin, M. D. Desch, J. Fainberg, K. Goetz, M. L. Goldstein, C. C. Harvey, S. Hoang, R. Howard, M. L. Kaiser, P. J. Kellogg, B. Klein, R. Knoll, A. Lecacheux, D. Lengyel-Frey, R. J. MacDowall, R. Manning, C. A. Meetre, A. Meyer, N. Monge, S. Monson, G. Nicol, M. J. Reiner, J. L. Steinberg, E. Torres, C. de Villedary, F. Wouters, and P. Zarka (1992), The Unified Radio and Plasma wave investigation, *Astron. & Astrophys. Suppl. Ser.*, *92*, 291–316.

Storey, L. R. O. (1953), An Investigation of Whistling Atmospherics, *Royal Society of London Philosophical Transactions Series A*, *246*, 113–141.

Storey, L. R. O., F. Lefeuvre, M. Parrot, L. Cairo, and R. R. Anderson (1991), Initial survey of the wave distribution functions for plasmaspheric hiss observed by ISEE 1, *J. Geophys. Res.*, *96*, 19,469–+, doi:10.1029/91JA01828.

Straub, H. C., M. A. Mangan, B. G. Lindsay, K. A. Smith, and R. F. Stebbings (1999), Absolute detection efficiency of a microchannel plate detector for kilo-electron volt energy ions, *Rev. Sci. Inst.*, *70*, 4238–4240, doi:10.1063/1.1150059.

Streltsov, A., E. Mishin, and G. Joyce (2009), Nonlinear interaction of broadband whistler waves with energetic electrons, *J. Atmos. Solar-Terr. Phys.*, *71*, 897–904, doi:10.1016/j.jastp.2009.02.007.

Stringer, T. E. (1963), Low-frequency waves in an unbounded plasma, *Journal of Nuclear Energy*, *5*, 89–107, doi:10.1088/0368-3281/5/2/304.

Sturrock, P. A. (1958), Kinematics of Growing Waves, *Phys. Rev.*, *112*, 1488–1503, doi:10.1103/PhysRev.112.1488.

Sturrock, P. A. (1961a), Non-linear effects in electron plasmas, *J. of Nucl. Energy*, *2*, 158–163, doi:10.1088/0368-3281/2/1/325.

Sturrock, P. A. (1961b), Energy-Momentum Tensor for Plane Waves, *Phys. Rev.*, *121*, 18–19, doi:10.1103/PhysRev.121.18.

Štverák, v., P. Trávníček, M. Maksimovic, E. Marsch, A. N. Fazakerley, and E. E. Scime (2008), Electron temperature anisotropy constraints in the solar wind, *J. Geophys. Res.*, *113*, 3103–+, doi:10.1029/2007JA012733.

Štverák, v., M. Maksimovic, P. M. Trávníček, E. Marsch, A. N. Fazakerley, and E. E. Scime (2009), Radial evolution of nonthermal electron populations in the low-latitude solar wind: Helios, Cluster, and Ulysses Observations, *J. Geophys. Res.*, *114*, 5104, doi:10.1029/2008JA013883.

Su, Z., H. Zheng, and S. Wang (2009), Evolution of electron pitch angle distribution due to interactions with whistler mode chorus following substorm injections, *J. Geophys. Res.*, *114*, 8202–+, doi:10.1029/2009JA014269.

Su, Z., H. Zheng, and S. Wang (2010), A parametric study on the diffuse auroral precipitation by resonant interaction with whistler mode chorus, *J. Geophys. Res.*, *115*, 5219–+, doi:10.1029/2009JA014759.

Sudarshan, A., and S. K. Sharma (1996), Quasimode decay of a lower-hybrid wave in a two-electron-temperature plasma, *J. Plasma Phys.*, *56*, 237–+, doi:10.1017/S0022377800019243.

Sugawa, M. (1987), Quasilinear Electron Heating by Electrostatic Electron Cyclotron Harmonic Waves in a Plasma, *J. Phys. Soc. Japan*, *56*, 2237–+, doi:10.1143/JPSJ.56.2237.

Sugawa, M. (1988), Observation of self-interaction of Bernstein waves by nonlinear Landau damping, *Phys. Rev. Lett.*, *61*, 543–546, doi:10.1103/PhysRevLett.61.543.

Sugawa, M., and R. Sugaya (1985), Nonlinear Interaction between Electrostatic Electron Cyclotron Harmonic Waves and Electrons, *J. Phys. Soc. Japan*, *54*, 1339–+, doi: 10.1143/JPSJ.54.1339.

Sugawa, M., R. Sugaya, and H. Nomoto (1974), Plasma heating by lower hybrid resonance, *Phys. Lett. A*, *48*, 407–408, doi: 10.1016/0375-9601(74)90599-4.

Summers, D., R. M. Thorne, and F. Xiao (1998), Relativistic theory of wave-particle resonant diffusion with application to electron acceleration in the magnetosphere, *J. Geophys. Res.*, *103*, 20,487–20,500, doi:10.1029/98JA01740.

Summers, D., B. Ni, and N. P. Meredith (2007), Timescales for radiation belt electron acceleration and loss due to resonant wave-particle interactions: 2. Evaluation for VLF chorus, ELF hiss, and electromagnetic ion cyclotron waves, *J. Geophys. Res.*, *112*, 4207–+, doi:10.1029/2006JA011993.

Sundkvist, D., V. Krasnoselskikh, S. D. Bale, S. J. Schwartz, J. Soucek, and F. Mozer (2012), Dispersive Nature of High Mach Number Collisionless Plasma Shocks: Poynting Flux of Oblique Whistler Waves, *Phys. Rev. Lett.*, *108*, 025,002, doi: 10.1103/PhysRevLett.108.025002.

Sydora, R. D., K. Sauer, and I. Silin (2007), Coherent whistler waves and oscilliton formation: Kinetic simulations, *Geophys. Res. Lett.*, *34*, 22,105–+, doi:10.1029/2007GL031839.

Tam, S. W. Y., and T. Chang (1999), Kinetic evolution and acceleration of the solar wind, *Geophys. Res. Lett.*, *26*, 3189–3192, doi:10.1029/1999GL010689.

Tam, S. W. Y., and T. Chang (2001), Effect of electron resonant heating on the kinetic evolution and acceleration of the solar wind, *Geophys. Res. Lett.*, *28*, 1351–1354, doi: 10.1029/2000GL012508.

Tanaka, M., C. C. Goodrich, D. Winske, and K. Papadopoulos (1983), A source of the backstreaming ion beams in the foreshock region, *J. Geophys. Res.*, *88*, 3046–3054, doi: 10.1029/JA088iA04p03046.

Tang, X., C. A. Cattell, J. P. Dombeck, L. Dai, L. B. Wilson III, A. W. Breneman, and A. J. Hupach (2012), THEMIS Observations of Plasma Waves near the Diffusion Region of Dayside Magnetopause Reconnection, *AGU Fall Meeting Abstracts*, pp. SM21A–2240, dec. 3-7, San Francisco, CA.

Taylor, R. J., and F. V. Coroniti (1972), Ion Heating via Turbulent Ion Acoustic Waves, *Phys. Rev. Lett.*, *29*, 34–38, doi: 10.1103/PhysRevLett.29.34.

Temerin, M., M. Woldorff, and F. S. Mozer (1979), Nonlinear steepening of the electrostatic ion cyclotron wave, *Phys. Rev. Lett.*, *43*, 1941–1943, doi:10.1103/PhysRevLett.43.1941.

Teste, A., and G. K. Parks (2009), Counterstreaming Beams and Flat-Top Electron Distributions Observed with Langmuir, Whistler, and Compressional Alfvén Waves in Earth's Magnetic Tail, *Phys. Rev. Lett.*, *102*(7), 075,003–+, doi: 10.1103/PhysRevLett.102.075003.

Thejappa, G., and R. J. MacDowall (1998), Evidence for Strong and Weak Turbulence Processes in the Source Region of a Local Type III Radio Burst, *Astrophys. J.*, *498*, 465–+, doi: 10.1086/305526.

Thejappa, G., and R. J. MacDowall (2000), Langmuir Waves in the Vicinity of interplanetary Shocks and the Consequences for Type II Burst Models, *Astrophys. J.*, *544*, L163–L167, doi: 10.1086/317303.

Thejappa, G., D. G. Wentzel, and R. G. Stone (1995), Low-frequency waves associated with Langmuir waves in solar wind, *J. Geophys. Res.*, *100*, 3417–3426, doi:10.1029/94JA03237.

Thejappa, G., M. L. Goldstein, R. J. MacDowall, K. Papadopoulos, and R. G. Stone (1999), Evidence for Langmuuir envelope solitons in solar type III burst source regions, *J. Geophys. Res.*, *104*, 28,279–+, doi:10.1029/1999JA900363.

Theodoridis, G. C., and F. R. Paolini (1969), The Angular Response of Spherical Plate Electrostatic Analyzers, *Rev. Sci. Inst.*, *40*, 621–631, doi:10.1063/1.1684022.

Thomas, V. A., D. Winske, and N. Omidi (1990), Reforming supercritical quasi-parallel shocks. I - One- and two-dimensional simulations, *J. Geophys. Res.*, *95*, 18,809–18,819, doi:10.1029/JA095iA11p18809.

Thomsen, M. F. (1988), Multi-spacecraft observations of collisionless shocks, *Adv. Space Res.*, *8*, 157–166, doi:10.1016/0273-1177(88)90126-3.

Thomsen, M. F. (2004), Why Kp is such a good measure of magnetospheric convection, *Space Weather*, *2*, S11,004, doi: 10.1029/2004SW000089.

Thomsen, M. F., and S. P. Gary (1982), A nonlocal theory of an electrostatic sinusoidal density drift instability, *J. Geophys. Res.*, *87*, 3551–3559, doi:10.1029/JA087iA05p03551.

Thomsen, M. F., J. T. Gosling, and S. J. Schwartz (1983a), Observational evidence on the origin of ions upstream of the earth's bow shock, *J. Geophys. Res.*, *88*, 7843–7852, doi: 10.1029/JA088iA10p07843.

Thomsen, M. F., S. P. Gary, W. C. Feldman, T. E. Cole, and H. C. Barr (1983b), Stability of electron distributions within the earth's bow shock, *J. Geophys. Res.*, *88*, 3035–3045, doi: 10.1029/JA088iA04p03035.

Thomsen, M. F., J. T. Gosling, S. J. Bame, W. C. Feldman, G. Paschmann, and N. Sckopke (1983c), Field-aligned ion beams upstream of the earth's bow shock Evidence for a magnetosheath source, *Geophys. Res. Lett.*, *10*, 1207–1210, doi: 10.1029/GL010i012p01207.

Thomsen, M. F., J. T. Gosling, S. J. Bame, and M. M. Mellott (1985a), Ion and electron heating at collisionless shocks near the critical Mach number, *J. Geophys. Res.*, *90*, 137–148, doi: 10.1029/JA090iA01p00137.

Thomsen, M. F., J. T. Gosling, S. J. Bame, and C. T. Rusell (1985b), Gyrating ions and large-amplitude monochromatic MHD waves upstream of the earth's bow shock, *J. Geophys. Res.*, *90*, 267–273, doi:10.1029/JA090iA01p00267.

Thomsen, M. F., J. T. Gosling, S. J. Bame, K. B. Quest, and D. Winske (1987a), On the noncoplanarity of the magnetic field within a fast collisionless shock, *J. Geophys. Res.*, *92*, 2305–2314, doi:10.1029/JA092iA03p02305.

Thomsen, M. F., J. A. Stansberry, S. J. Bame, J. T. Gosling, and M. M. Mellott (1987b), Strong electron heating at the earth's bow shock, *J. Geophys. Res.*, *92*, 10,119–10,124, doi: 10.1029/JA092iA09p10119.

Thomsen, M. F., J. T. Gosling, S. J. Bame, and C. T. Russell (1990a), Magnetic pulsations at the quasi-parallel shock, *J. Geophys. Res.*, *95*, 957–966, doi:10.1029/JA095iA02p00957.

Thomsen, M. F., J. T. Gosling, S. J. Bame, T. G. Onsager, and C. T. Russell (1990b), Two-state ion heating at quasi-parallel shocks, *J. Geophys. Res.*, *95*, 6363–6374, doi: 10.1029/JA095iA05p06363.

Thorne, R. M., and R. B. Horne (1994), Landau damping of magnetospherically reflected whistlers, *J. Geophys. Res.*, *99*, 17,249–+, doi:10.1029/94JA01006.

Thorne, R. M., and R. B. Horne (1996), Whistler absorption and electron heating near the plasmapause, *J. Geophys. Res.*, *101*, 4917–4928, doi:10.1029/95JA03671.

Thorne, R. M., and C. F. Kennel (1971), Relativistic electron precipitation during magnetic storm main phase., *J. Geophys. Res.*, *76*, 4446–4453, doi:10.1029/JA076i019p04446.

Thorne, R. M., and B. T. Tsurutani (1981), The generation mechanism for magnetosheath lion roars, *Nature*, *293*, 384–386, doi: 10.1038/293384a0.

Thorne, R. M., E. J. Smith, R. K. Burton, and R. E. Holzer (1973), Plasmaspheric Hiss, *J. Geophys. Res.*, *78*, 1581–1596, doi:10.1029/JA078i010p01581.

Thorne, R. M., S. R. Church, and D. J. Gorney (1979), On the origin of plasmaspheric hiss - The importance of wave propagation and the plasmapause, *J. Geophys. Res.*, *84*, 5241–5247, doi:10.1029/JA084iA09p05241.

Thorne, R. M., T. P. O'Brien, Y. Y. Shprits, D. Summers, and R. B. Horne (2005), Timescale for MeV electron microburst loss during geomagnetic storms, *J. Geophys. Res.*, *110*, 9202–+, doi:10.1029/2004JA010882.

Tidman, D. A. (1965), Radio emission from shock waves and Type II solar outbursts, *Planet. Space Sci.*, *13*, 781–+, doi: 10.1016/0032-0633(65)90115-7.

Tidman, D. A., and T. H. Dupree (1965), Enhanced Bremsstrahlung from Plasmas containing Nonthermal Electrons, *Phys. Fluids*, *8*, 1860–1870, doi:10.1063/1.1761120.

Tidman, D. A., and N. A. Krall (1971), *Shock waves in collisionless plasmas*.

Tidman, D. A., and H. M. Stainer (1965), Frequency and Wavenumber Shifts for Nonlinear Waves in a "Hot" Plasma, *Phys. Fluids*, *8*, 345–353, doi:10.1063/1.1761228.

Timothy, J. G., G. H. Mount, and R. L. Bybee (1981), Multi-anode microchannel arrays., *IEEE Trans. Nucl. Sci.*, *28*, 689–697, doi:10.1109/TNS.1981.4331264.

Tobita, K., H. Takeuchi, Y. Kusama, M. Nemoto, and H. Kimura (1987), Absolute detection efficiency of a microchannel-plate detector for ions and neutrals, *Japanese J. Appl. Phys.*, *26*, 509–+, doi:10.1143/JJAP.26.509.

Toida, M., and T. Gohira (2011), Repeated Acceleration of Thermal Ions by an Oblique Shock Wave and Associated Whistler Instabilities, *Plasma Fusion Res.*, *5*, 2065–+, doi:10.1585/pfr.5.S2065.

Toida, M., A. Sugishima, and Y. Ohsawa (2002), Simulation studies of energy transfer to heavy ions by strong current-driven instabilities, *Phys. Plasmas*, *9*, 2541–2548, doi:10.1063/1.1474423.

Tokar, R. L., and D. A. Gurnett (1985), The propagation and growth of whistler mode waves generated by electron beams in earth's bow shock, *J. Geophys. Res.*, *90*, 105–114, doi:10.1029/JA090iA01p00105.

Tokar, R. L., D. A. Gurnett, and W. C. Feldman (1984), Whistler mode turbulence generated by electron beams in earth's bow shock, *J. Geophys. Res.*, *89*, 105–114, doi:10.1029/JA089iA01p00105.

Torrence, C., and G. P. Compo (1998a), A Practical Guide to Wavelet Analysis., *Bull. Amer. Meteor. Soc.*, *79*, 61–78, doi:10.1175/1520-0477(1998)079.

Torrence, C., and G. P. Compo (1998b), Wavelet Analysis Software, atmospheric and Oceanic Sciences, University of Colorado, Online: *http://paos.colorado.edu/research/wavelets/*.

Treumann, R. A. (2009), Fundamentals of collisionless shocks for astrophysical application, 1. Non-relativistic shocks, *Astron. & Astrophys. Rev.*, *17*, 409–535, doi:10.1007/s00159-009-0024-2.

Treumann, R. A., and W. Baumjohann (1997), *Advanced space plasma physics*, Imperial College Press.

Treumann, R. A., J. Labelle, and R. Pottelette (1991), Plasma diffusion at the magnetopause - The case of lower hybrid drift waves, *J. Geophys. Res.*, *96*, 16,009–+, doi:10.1029/91JA01671.

Treumann, R. A., N. Dubouloz, and R. Pottelette (1996), Electron acceleration from localized lower-hybrid waves, *Adv. Space Res.*, *18*, 291–294, doi:10.1016/0273-1177(95)00974-4.

Treumann, R. A., E. Georgescu, and W. Baumjohann (2000), Lion Roar Trapping in Mirror Modes, *Geophys. Res. Lett.*, *27*, 1843, doi:10.1029/2000GL003767.

Tripathi, A. K., and R. P. Singhal (2005), Electrostatic electron cyclotron harmonic instability due to energetic electrons in Jupiter's magnetosphere, *J. Geophys. Res.*, *110*, 12,205–+, doi:10.1029/2005JA011113.

Tripathi, A. K., and R. P. Singhal (2007), Electrostatic electron cyclotron harmonic instability in outer planetary magnetospheres, *Planet. Space Sci.*, *55*, 876–888, doi:10.1016/j.pss.2006.11.001.

Tripathi, V. K., and C. S. Liu (1982), Parametric instabilities of electron cyclotron waves in plasmas, *Phys. Fluids*, *25*, 1388–1392, doi:10.1063/1.863904.

Tsai, C. L., H. H. Chen, B. H. Wu, and L. C. Lee (2007), Structure of fast shocks in the presence of heat conduction, *Phys. Plasmas*, *14*, 122,903–+, doi:10.1063/1.2819673.

Tsubouchi, K., and B. Lembège (2004), Full particle simulations of short large-amplitude magnetic structures (SLAMS) in quasi-parallel shocks, *J. Geophys. Res.*, *109*, 2114–+, doi:10.1029/2003JA010014.

Tsurutani, B. T., and P. Rodriguez (1981), Upstream waves and particles: An overview of ISEE results, *J. Geophys. Res.*, *86*, 4319–4324, doi:10.1029/0JGREA0000860000A6004319000001.

Tsurutani, B. T., and E. J. Smith (1974), Postmidnight Chorus: A Substorm Phenomenon, *J. Geophys. Res.*, *79*, 118–127, doi:10.1029/JA079i001p00118.

Tsurutani, B. T., and E. J. Smith (1977), Two types of magnetospheric ELF chorus and their substorm dependences, *J. Geophys. Res.*, *82*, 5112–5128, doi:10.1029/JA082i032p05112.

Tsurutani, B. T., E. J. Smith, and D. E. Jones (1983), Waves observed upstream of interplanetary shocks, *J. Geophys. Res.*, *88*, 5645–5656, doi:10.1029/JA088iA07p05645.

Tsurutani, B. T., E. J. Smith, R. M. Thorne, J. T. Gosling, and H. Matsumoto (1987), Steepened magnetosonic waves at Comet Giacobini-Zinner, *J. Geophys. Res.*, *92*, 11,074–11,082, doi:10.1029/JA092iA10p11074.

Tsurutani, B. T., A. L. Brinca, B. Buti, E. J. Smith, R. M. Thorne, and H. Matsumoto (1989a), Magnetic pulses with durations near the local proton cyclotron period - Comet Giacobini-Zinner, *J. Geophys. Res.*, *94*, 29–35, doi:10.1029/JA094iA01p00029.

Tsurutani, B. T., E. J. Smith, A. L. Brinca, R. M. Thorne, and H. Matsumoto (1989b), Properties of whistler mode wave packets at the leading edge of steepened magnetosonic waves - Comet Giacobini-Zinner, *Planet. Space Sci.*, *37*, 167–182, doi:10.1016/0032-0633(89)90004-4.

Tsurutani, B. T., E. J. Smith, H. Matsumoto, A. L. Brinca, and N. Omidi (1990a), Highly nonlinear magnetic pulses at Comet Giacobini-Zinner, *Geophys. Res. Lett.*, *17*, 757–760, doi:10.1029/GL017i006p00757.

Tsurutani, B. T., E. J. Smith, B. Buti, H. Matsumoto, and A. Brinca (1990b), Discrete phase changes within nonlinear steepened magnetosonic waves - Comet Giacobini-Zinner, *Geophys. Res. Lett.*, *17*, 1817–1820, doi:10.1029/GL017i011p01817.

Tsurutani, B. T., E. J. Smith, M. E. Burton, J. K. Arballo, C. Galvan, X.-Y. Zhou, D. J. Southwood, M. K. Dougherty, K.-H. Glassmeier, F. M. Neubauer, and J. K. Chao (2001), Oblique "1-Hz" whistler mode waves in an electron foreshock: The Cassini near-Earth encounter, *J. Geophys. Res.*, *106*, 30,223–30,238, doi:10.1029/2001JA900108.

Tsurutani, B. T., O. P. Verkhoglyadova, G. S. Lakhina, and S. Yagitani (2009), Properties of dayside outer zone chorus during HILDCAA events: Loss of energetic electrons, *J. Geophys. Res.*, *114*, 3207–+, doi:10.1029/2008JA013353.

Tsutsui, M., H. Yamagishi, and H. Matsumoto (1975), Nonlinear wave-wave interaction between large amplitude electron Bernstein waves and ion acoustic waves, *Phys. Lett. A*, *55*, 31–32, doi:10.1016/0375-9601(75)90383-7.

Tu, C., and E. Marsch (2001a), Wave dissipation by ion cyclotron resonance in the solar corona, *Astron. & Astrophys.*, *368*, 1071–1076, doi:10.1051/0004-6361:20010019.

Tu, C., and E. Marsch (2001b), On cyclotron wave heating and acceleration of solar wind ions in the outer corona, *J. Geophys. Res.*, *106*, 8233–8252, doi:10.1029/2000JA000024.

Tucker, W. H. (1973), Heating of Solar Active Regions by Magnetic Energy Dissipation: the Steady-State Case, *Astrophys. J.*, *186*, 285–290, doi:10.1086/152498.

Ukhorskiy, A. Y., B. H. Mauk, N. J. Fox, D. G. Sibeck, and J. M. Grebowsky (2011), Radiation belt storm probes: Resolving fundamental physics with practical consequences, *J. Atmos. Solar-Terr. Phys.*, *73*, 1417–1424, doi:10.1016/j.jastp.2010.12.005.

Umeda, T., and T. Ito (2008), Vlasov simulation of Langmuir decay instability, *Phys. Plasmas*, *15*(8), 084,503–+, doi:10.1063/1.2965494.

Umeda, T., Y. Omura, and H. Matsumoto (2004), Two-dimensional particle simulation of electromagnetic field signature associated with electrostatic solitary waves, *J. Geophys. Res.*, *109*, 2207–+, doi:10.1029/2003JA010000.

Umeda, T., Y. Omura, T. Miyake, H. Matsumoto, and M. Ashour-Abdalla (2006), Nonlinear evolution of the electron two-stream instability: Two-dimensional particle simulations, *J. Geophys. Res.*, *111*, 10,206–+, doi:10.1029/2006JA011762.

Umeda, T., M. Ashour-Abdalla, D. Schriver, R. L. Richard, and F. V. Coroniti (2007), Particle-in-cell simulation of Maxwellian ring velocity distribution, *J. Geophys. Res.*, *112*, 4212–+, doi:10.1029/2006JA012124.

Umeda, T., M. Yamao, and R. Yamazaki (2008), Two-dimensional Full Particle Simulation of a Perpendicular Collisionless Shock with a Shock-Rest-Frame Model, *Astrophys. J. Lett.*, *681*, L85–L88, doi:10.1086/590408.

Umeda, T., M. Yamao, and R. Yamazaki (2009), Electron Acceleration at a Low Mach Number Perpendicular Collisionless Shock, *Astrophys. J.*, *695*, 574–579, doi:10.1088/0004-637X/695/1/574.

Umeda, T., Y. Kidani, M. Yamao, S. Matsukiyo, and R. Yamazaki (2010), On the reformation at quasi- and exactly perpendicular shocks: Full particle-in-cell simulations, *J. Geophys. Res.*, *115*, A10,250, doi:10.1029/2010JA015458.

Umeda, T., M. Yamao, and R. Yamazaki (2011), Cross-scale coupling at a perpendicular collisionless shock, *Planet. Space Sci.*, *59*, 449–455, doi:10.1016/j.pss.2010.01.007.

Umeda, T., Y. Kidani, S. Matsukiyo, and R. Yamazaki (2012), Modified two-stream instability at perpendicular collisionless shocks: Full particle simulations, *J. Geophys. Res.*, *117*, A03206, doi:10.1029/2011JA017182.

Usui, H., J. Koizumi, and H. Matsumoto (1997), Statistical study on electron cyclotron harmonic waves observed in the dayside magnetosphere, *Adv. Space Res.*, *20*, 857–860, doi:10.1016/S0273-1177(97)00520-6.

Usui, H., W. R. Paterson, H. Matsumoto, L. A. Frank, M. Nakamura, H. Matsui, T. Yamamoto, O. Nishimura, and J. Koizumi (1999a), Geotail electron observations in association with intense bursts of electron cyclotron harmonic waves in the dayside magnetosphere, *J. Geophys. Res.*, *104*, 4477–4484, doi:10.1029/1998JA900151.

Usui, H., H. Matsumoto, T. Mukai, and Y. Saito (1999b), GEOTAIL observation of electron cyclotron harmonic waves near the dayside magnetopause, *Adv. Space Res.*, *24*, 99–102, doi:10.1016/S0273-1177(99)00433-0.

Vaisberg, O. L., A. A. Galeev, S. I. Klimov, M. N. Nozdrachev, A. N. Omelchenko, and R. Z. Sagdeev (1982), Energy dissipation mechanisms in high-M collisionless shock waves - A study based on measurements by the Prognoz 8 satellite, *ZhETF Pis ma Redaktsiiu*, *35*, 25–28.

Vaivads, A., M. André, S. C. Buchert, J. Wahlund, A. N. Fazakerley, and N. Cornilleau-Wehrlin (2004a), Cluster observations of lower hybrid turbulence within thin layers at the magnetopause, *Geophys. Res. Lett.*, *31*, 3804–+, doi:10.1029/2003GL018142.

Vaivads, A., Y. Khotyaintsev, M. André, A. Retinò, S. C. Buchert, B. N. Rogers, P. Décréau, G. Paschmann, and T. D. Phan (2004b), Structure of the Magnetic Reconnection Diffusion Region from Four-Spacecraft Observations, *Phys. Rev. Lett.*, *93*, 105,001–+, doi:10.1103/PhysRevLett.93.105001.

Vaivads, A., O. Santolík, G. Stenberg, M. André, C. J. Owen, P. Canu, and M. Dunlop (2007), Source of whistler emissions at the dayside magnetopause, *Geophys. Res. Lett.*, *34*, 9106–+, doi:10.1029/2006GL029195.

Vedenov, A. A. (1963), Quasi-linear plasma theory (theory of a weakly turbulent plasma), *J. Nucl. Energy*, *5*, 169–186, doi:10.1088/0368-3281/5/3/305.

Vekshtein, G. E., D. D. Ryutov, and R. Z. Sagdeev (1970), Asymptotic Solution in the Problem of Anomalous Plasma Resistance, *Sov. Phys.–JETP*, *12*, 291–+.

Veltri, P., A. Mangeney, and J. D. Scudder (1990), Electron heating in quasi-perpendicular shocks - A Monte Carlo simulation, *J. Geophys. Res.*, *95*, 14,939–14,959, doi:10.1029/JA095iA09p14939.

Verdon, A. L., I. H. Cairns, D. B. Melrose, and P. A. Robinson (2009a), Warm electromagnetic lower hybrid wave dispersion relation, *Phys. Plasmas*, *16*(5), 052,105–+, doi:10.1063/1.3132628.

Verdon, A. L., I. H. Cairns, D. B. Melrose, and P. A. Robinson (2009b), Properties of lower hybrid waves, in *Proceedings of the International Astronomical Union*, *Universal Heliophysical Processes*, vol. 257, edited by N. Gopalswamy & D. F. Webb, pp. 569–573, doi:10.1017/S1743921309029871.

Verkhoglyadova, O. P., and B. T. Tsurutani (2009), Polarization properties of Gendrin mode waves observed in the Earth's magnetosphere: observations and theory, *Ann. Geophys.*, *27*, 4429–4433.

Vetoulis, G., and M. Oppenheim (2001), Electrostatic Mode Excitation in Electron Holes due to Wave Bounce Resonances, *Phys. Rev. Lett.*, *86*, 1235–1238, doi:10.1103/PhysRevLett.86.1235.

Viñas, A. F., and C. Gurgiolo (2009), Spherical harmonic analysis of particle velocity distribution function: Comparison of moments and anisotropies using Cluster data, *J. Geophys. Res.*, *114*, 1105, doi:10.1029/2008JA013633.

Viñas, A. F., C. Gurgiolo, T. Nieves-Chinchilla, S. P. Gary, and M. L. Goldstein (2010), Whistler Waves Driven by Anisotropic Strahl Velocity Distributions: Cluster Observations, *Twelfth International Solar Wind Conference*, *1216*, 265–270, doi:10.1063/1.3395852.

Viljanen, A., and R. Pirjola (1994), Geomagnetically induced currents in the Finnish high-voltage power system, *Surveys in Geophys.*, *15*, 383–408, doi:10.1007/BF00665999.

Villani, C. (2002), Chapter 2 A review of mathematical topics in collisional kinetic theory, pp. 71–74, North-Holland, Washington, D.C., doi:10.1016/S1874-5792(02)80004-0.

Villani, C. (2006), Entropy production and convergence to equilibrium for the Boltzmann equation, in *XIVTH International Congress on Mathematical Physics*, edited by J.-C. Zambrini, pp. 130–144, doi:10.1142/9789812704016_0011.

Vinas, A. F., and J. D. Scudder (1986), Fast and optimal solution to the 'Rankine-Hugoniot problem', *J. Geophys. Res.*, *91*, 39–58, doi:10.1029/JA091iA01p00039.

Vink, J., and J. M. Laming (2003), On the Magnetic Fields and Particle Acceleration in Cassiopeia A, *Astrophys. J.*, *584*, 758–769, doi:10.1086/345832.

Vladimirov, A. E., A. M. Bykov, and D. C. Ellison (2008), Turbulence Dissipation and Particle Injection in Nonlinear Diffusive Shock Acceleration with Magnetic Field Amplification, *Astrophys. J.*, *688*, 1084–1101, doi:10.1086/592240.

Vocks, C., and G. Mann (2003), Generation of Suprathermal Electrons by Resonant Wave-Particle Interaction in the Solar Corona and Wind, *Astrophys. J.*, *593*, 1134–1145, doi:10.1086/376682.

Vocks, C., and G. Mann (2006), Whistler wave excitation by relativistic electrons in coronal loops during solar flares, *Astron. & Astrophys.*, *452*, 331–337, doi:10.1051/0004-6361:20054042.

Vocks, C., and G. Mann (2009), Scattering of solar energetic electrons in interplanetary space, *Astronomy and Astrophys.*, *502*, 325–332, doi:10.1051/0004-6361/200911738.

Vocks, C., and E. Marsch (2002), Kinetic Results for Ions in the Solar Corona with Wave-Particle Interactions and Coulomb Collisions, *Astrophys. J.*, *568*, 1030–1042, doi:10.1086/338885.

Vocks, C., C. Salem, R. P. Lin, and G. Mann (2005), Electron Halo and Strahl Formation in the Solar Wind by Resonant Interaction with Whistler Waves, *Astrophys. J.*, *627*, 540–549, doi:10.1086/430119.

Vocks, C., G. Mann, and G. Rausche (2008), Formation of suprathermal electron distributions in the quiet solar corona, *Astronomy and Astrophys.*, *480*, 527–536, doi:10.1051/0004-6361:20078826.

Volokitin, A., C. Krafft, and G. Matthieussent (1997), Whistler waves emission by a modulated electron beam: Nonlinear theory, *Phys. Plasmas*, *4*, 4126–4135, doi:10.1063/1.872532.

Volokitin, A. S., and C. Krafft (2001a), Electron beam interaction with lower hybrid waves at Cherenkov and cyclotron resonances, *Phys. Plasmas*, *8*, 3748–3758, doi:10.1063/1.1380694.

Volokitin, A. S., and C. Krafft (2001b), Spiral electron beam interaction with whistler waves at cyclotron resonances, *Phys. Plasmas*, *8*, 4960–4971, doi:10.1063/1.1398085.

von Rosenvinge, T. T., L. M. Barbier, J. Karsch, R. Liberman, M. P. Madden, T. Nolan, D. V. Reames, L. Ryan, S. Singh, H. Trexel, G. Winkert, G. M. Mason, D. C. Hamilton, and P. Walpole (1995a), The Energetic Particles: Acceleration, Composition, and Transport (EPACT) investigation on the WIND spacecraft, *Space Sci. Rev.*, *71*, 155–206, doi:10.1007/BF00751329.

von Rosenvinge, T. T., L. M. Barbier, J. Karsch, R. Liberman, M. P. Madden, T. Nolan, D. V. Reames, L. Ryan, S. Singh, H. Trexel, G. Winkert, G. M. Mason, D. C. Hamilton, and P. Walpole (1995b), The Energetic Particles: Acceleration, Composition, and Transport (EPACT) investigation on the WIND spacecraft, *Space Sci. Rev.*, *71*, 155–206, doi:10.1007/BF00751329.

Vranjes, J., and S. Poedts (2009a), The universally growing mode in the solar atmosphere: coronal heating by drift waves, *Mon. Not. R. Astron. Soc.*, *398*, 918–930, doi:10.1111/j.1365-2966.2009.15180.x.

Vranjes, J., and S. Poedts (2009b), Electric fields in solar magnetic structures due to gradient-driven instabilities: heating and acceleration of particles, *Mon. Not. R. Astron. Soc.*, *400*, 2147–2152, doi:10.1111/j.1365-2966.2009.15612.x.

Walker, S., H. Alleyne, M. Balikhin, M. André, and T. Horbury (2004a), Electric field scales at quasi-perpendicular shocks, *Ann. Geophys.*, *22*, 2291–2300.

Walker, S., F. Sahraoui, M. Balikhin, G. Belmont, J. Pinçon, L. Rezeau, H. Alleyne, N. Cornilleau-Wehrlin, and M. André (2004b), A comparison of wave mode identification techniques, *Ann. Geophys.*, *22*, 3021–3032.

Walker, S. N., M. A. Balikhin, and M. N. Nozdrachev (1999), Ramp nonstationarity and the generation of whistler waves upstream of a strong quasiperpendicular shock, *Geophys. Res. Lett.*, *26*, 1357–1360, doi:10.1029/1999GL900210.

Walker, S. N., M. A. Balikhin, H. S. C. K. Alleyne, Y. Hobara, M. André, and M. W. Dunlop (2008), Lower hybrid waves at the shock front: a reassessment, *Ann. Geophys.*, *26*, 699–707.

Wang, Y., F. S. Wei, X. S. Feng, S. H. Zhang, P. B. Zuo, and T. R. Sun (2010), Energetic Electrons Associated with Magnetic Reconnection in the Magnetic Cloud Boundary Layer, *Phys. Rev. Lett.*, *105*, 195,007–+, doi:10.1103/PhysRevLett.105.195007.

Warmuth, A., G. Mann, and H. Aurass (2009), Modelling shock drift acceleration of electrons at the reconnection outflow termination shock in solar flares. Observational constraints and parametric study, *Astronomy and Astrophys.*, *494*, 677–691, doi:10.1051/0004-6361:200810101.

Watt, C. E. J., R. B. Horne, and M. P. Freeman (2002), Ion-acoustic resistivity in plasmas with similar ion and electron temperatures, *Geophys. Res. Lett.*, *29*, 010,000–1, doi: 10.1029/2001GL013451.

Weibel, E. S. (1959), Spontaneously Growing Transverse Waves in a Plasma Due to an Anisotropic Velocity Distribution, *Phys. Rev. Lett.*, *2*, 83–84, doi:10.1103/PhysRevLett.2.83.

Wilkinson, W. P., A. K. Pardaens, S. J. Schwartz, D. Burgess, H. Luehr, R. L. Kessel, M. Dunlop, and C. J. Farrugia (1993), Nonthermal ions and associated magnetic field behavior at a quasi-parallel earth's bow shock, *J. Geophys. Res.*, *98*, 3889–3905, doi:10.1029/92JA01669.

Willes, A. J., and I. H. Cairns (2001), Mode Conversion and Reflection of Langmuir Waves in an Inhomogeneous Solar Wind, *Publications of the Astronomical Society of Australia*, *18*, 355–360, doi:10.1071/AS01051.

Willes, A. J., S. D. Bale, and I. H. Cairns (2002), Evidence for Langmuir wave tunneling in the inhomogeneous solar wind, *J. Geophys. Res.*, *107*, 1320–+, doi:10.1029/2002JA009259.

Willett, J. E., and H. Mehdian (1982), Lower-hybrid instability in current-carrying plasmas, *J. Plasma Phys.*, *28*, 527–537, doi:10.1017/S0022377800000465.

Williams, J. D., L.-J. Chen, W. S. Kurth, D. A. Gurnett, M. K. Dougherty, and A. M. Rymer (2005), Electrostatic solitary structures associated with the November 10, 2003, interplanetary shock at 8.7 AU, *Geophys. Res. Lett.*, *32*, 17,103–+, doi:10.1029/2005GL023079.

Wilson III, L. B. (2010), The microphysics of collisionless shocks, Ph.D. thesis, University of Minnesota *lynn.b.wilsoniii@gmail.com*.

Wilson III, L. B., C. A. Cattell, P. Kellogg, K. Goetz, K. Kersten, L. Hanson, and J. Kasper (2006), A Wind/Waves Study of Waves in the Ramp Region of Interplanetary Shocks, *AGU Fall Meeting Abstracts*, pp. A390+.

Wilson III, L. B., C. A. Cattell, P. J. Kellogg, K. Goetz, K. Kersten, L. Hanson, R. MacGregor, and J. C. Kasper (2007), Waves in Interplanetary Shocks: A Wind/WAVES Study, *Phys. Rev. Lett.*, *99*, 041,101–+, doi: 10.1103/PhysRevLett.99.041101.

Wilson III, L. B., C. A. Cattell, P. J. Kellogg, K. Goetz, K. Kersten, A. Szabo, and J. C. Kasper (2008), Simultaneous Wave and Particle Data at Interplanetary Shocks Observed by Wind, *AGU Spring Meeting Abstracts*, pp. A19+.

Wilson III, L. B., C. A. Cattell, P. J. Kellogg, K. Goetz, K. Kersten, J. C. Kasper, A. Szabo, and K. Meziane (2009a), Low-frequency whistler waves and shocklets observed at quasi-perpendicular interplanetary shocks, *J. Geophys. Res.*, *114*, 10,106–+, doi:10.1029/2009JA014376.

Wilson III, L. B., C. A. Cattell, P. J. Kellogg, K. Goetz, K. Kersten, J. C. Kasper, and A. Szabo (2009b), Observational Evidence of Modified Two Stream Instability Driven Waves at an Interplanetary Shock, *AGU Fall Meeting Abstracts*, pp. A1291+.

Wilson III, L. B., C. A. Cattell, P. J. Kellogg, K. Goetz, K. Kersten, J. C. Kasper, A. Szabo, and M. Wilber (2010a), Large-amplitude electrostatic waves observed at a supercritical interplanetary shock, *J. Geophys. Res.*, *115*, 12,104–+, doi: 10.1029/2010JA015332.

Wilson III, L. B., C. A. Cattell, P. J. Kellogg, J. R. Wygant, K. Goetz, A. Breneman, and K. Kersten (2010b), A statistical study of the properties of large amplitude whistler waves and their association with few eV to 30 keV electron distributions observed in the magnetosphere by Wind, *J. Geophys. Res.*, rejected.

Wilson III, L. B., C. A. Cattell, P. J. Kellogg, K. Goetz, J. Wygant, A. W. Breneman, and K. Kersten (2010c), Characteristics of electron distributions observed during large amplitude whistler wave events in the magnetosphere, *AGU Fall Meeting Abstracts*, pp. B1703+.

Wilson III, L. B., C. A. Cattell, P. J. Kellogg, K. Goetz, K. Kersten, J. C. Kasper, A. Szabo, and M. Wilber (2010d), Atypical Waves and Particle Heating at an Interplanetary Shock, heliophysics Science Seminar, NASA Goddard Space Flight Center, Apr. 1st, 2010.

Wilson III, L. B., C. A. Cattell, P. J. Kellogg, K. Goetz, K. Kersten, J. C. Kasper, A. Szabo, and M. Wilber (2010e), Atypical Waves and Particle Heating at an Interplanetary Shock, space Physics Seminar, University of California at Berkeley, Oct. 5th, 2010.

Wilson III, L. B., C. A. Cattell, P. J. Kellogg, J. R. Wygant, K. Goetz, A. Breneman, and K. Kersten (2011a), A statistical study of the properties of large amplitude whistler waves and their association with few eV to 30 keV electron distributions observed in the magnetosphere by Wind, *ArXiv e-prints*.

Wilson III, L. B., C. A. Cattell, P. J. Kellogg, J. R. Wygant, K. Goetz, A. Breneman, and K. Kersten (2011b), A statistical study of the properties of large amplitude whistler waves observed in the magnetosphere by Wind, *J. Geophys. Res.*, rejected.

Wilson III, L. B., A. Szabo, A. Koval, C. A. Cattell, P. J. Kellogg, K. Goetz, A. Breneman, K. Kersten, J. C. Kasper, and M. Pulupa (2011c), Wind Observations of Wave Heating and/or Particle Energization at Supercritical Interplanetary Shocks, *EGU General Assembly 2011, held 03-08 April, 2011 in Vienna, Austria http://meetings.copernicus.org/egu2011/home.html, p. 3893*, *13*, 3893–+.

Wilson III, L. B., A. Szabo, A. Koval, C. A. Cattell, A. Breneman, K. Goetz, P. J. Kellogg, K. Kersten, J. C. Kasper, B. A. Maruca, and M. Pulupa (2011d), Electromagnetic lower hybrid waves, whistler waves, and particle heating/acceleration at supercritical interplanetary shocks, space Physics Seminar, University of California at Berkeley, Jul. 18th, 2011.

Wilson III, L. B., C. A. Cattell, P. J. Kellogg, J. R. Wygant, K. Goetz, A. Breneman, and K. Kersten (2011e), The properties of large amplitude whistler mode waves in the magnetosphere: propagation and relationship with geomagnetic activity, *Geophys. Res. Lett.*, *38*, L17,107–+, doi: 10.1029/2011GL048671.

Wilson III, L. B., C. A. Cattell, P. J. Kellogg, J. R. Wygant, K. Goetz, A. Breneman, and K. Kersten (2011f), The properties of large amplitude whistler mode waves in the magnetosphere: propagation and relationship with geomagnetic activity, rBSP SGW, Applied Physics Laboratory, Oct. 21st, 2011.

Wilson III, L. B., A. Szabo, A. Koval, C. A. Cattell, P. J. Kellogg, K. Goetz, A. W. Breneman, K. Kersten, J. C. Kasper, B. A. Maruca, and M. Pulupa (2011g), Electromagnetic lower hybrid waves, whistler waves, and particle heating/acceleration at supercritical interplanetary shocks, *AGU Fall Meeting Abstracts*, pp. B2048+.

Wilson III, L. B., A. Szabo, A. Koval, C. A. Cattell, A. Breneman, K. Goetz, P. J. Kellogg, K. Kersten, J. C. Kasper, B. A. Maruca, and M. Pulupa (2012a), Observations of Electromagnetic Whistler Precursors at Supercritical Interplanetary Shocks, *Phys. Rev. Lett.*, rejected.

Wilson III, L. B., A. Szabo, A. Koval, C. A. Cattell, P. J. Kellogg, K. Goetz, A. Breneman, K. Kersten, J. C. Kasper, B. A. Maruca, and M. Pulupa (2012b), Electromagnetic waves and electron anisotropies downstream of supercritical interplanetary shocks, *J. Geophys. Res.*, doi:10.1029/2012JA018167, in press.

Wilson III, L. B., A. Koval, D. G. Sibeck, A. Szabo, C. A. Cattell, P. J. Kellogg, K. Goetz, A. Breneman, K. Kersten, J. C. Kasper, B. A. Maruca, M. Pulupa, and M. Wilber (2012c), Shocklets, SLAMS, and field-aligned ion beams in the terrestrial foreshock, *Geophys. Res. Lett.*, rejected.

Wilson III, L. B., A. Koval, A. Szabo, A. Breneman, C. A. Cattell, K. Goetz, P. J. Kellogg, K. Kersten, J. C. Kasper, B. A. Maruca, and M. Pulupa (2012d), Observations of Electromagnetic Whistler Precursors at Supercritical Interplanetary Shocks, *Geophys. Res. Lett.*, *39*, L08,109–+, doi:10.1029/2012GL051581.

Wilson III, L. B., A. Szabo, A. Koval, C. A. Cattell, A. Breneman, K. Goetz, P. J. Kellogg, K. Kersten, J. C. Kasper, B. A. Maruca, and M. Pulupa (2012e), Observations of Electromagnetic Whistler Precursors at Supercritical Interplanetary Shocks, space Physics Seminar, University of Minnesota, Mar. 7th, 2012.

Wilson III, L. B., A. Koval, A. Szabo, A. Breneman, C. A. Cattell, K. Goetz, P. J. Kellogg, K. Kersten, J. C. Kasper, B. A. Maruca, and M. Pulupa (2012f), Observations of Electromagnetic Whistler Precursors at Supercritical Interplanetary Shocks, space Physics Seminar, Dartmouth College, May 1st, 2012.

Wilson III, L. B., A. Koval, A. Szabo, A. Breneman, C. A. Cattell, K. Goetz, P. J. Kellogg, K. Kersten, J. C. Kasper, B. A. Maruca, and M. Pulupa (2012g), Observations of Electromagnetic Whistler Precursors at Supercritical Interplanetary Shocks, *SHINE*, june 25-29, 2012, Hawaii.

Wilson III, L. B., A. Koval, A. Szabo, A. Breneman, C. A. Cattell, K. Goetz, P. J. Kellogg, K. Kersten, J. C. Kasper, B. A. Maruca, and M. Pulupa (2012h), Search Coil vs. Fluxgate Magnetometer Measurements at Interplanetary Shocks, *SHINE*, june 25-29, 2012, Hawaii.

Wilson III, L. B., A. Koval, D. G. Sibeck, A. Szabo, C. A. Cattell, J. C. Kasper, B. A. Maruca, M. Pulupa, C. S. Salem, and M. Wilber (2012i), Shocklets, SLAMS, and field-aligned ion beams in the terrestrial foreshock, *ArXiv e-prints*.

Wilson III, L. B., A. Koval, D. G. Sibeck, A. Szabo, C. A. Cattell, J. C. Kasper, B. A. Maruca, M. Pulupa, C. S. Salem, and M. Wilber (2012j), Shocklets, SLAMS, and field-aligned ion beams in the terrestrial foreshock, *J. Geophys. Res.*, doi:10.1029/2012JA018186, in press.

Wilson III, L. B., A. Koval, A. Szabo, A. Breneman, C. A. Cattell, K. Goetz, P. J. Kellogg, K. Kersten, J. C. Kasper, B. A. Maruca, and M. Pulupa (2012k), Observations of Electromagnetic Whistler Precursors at Supercritical Interplanetary Shocks, space Physics Seminar, University of California at Los Angeles, Sept. 28th, 2012.

Wilson III, L. B., A. Koval, A. Szabo, A. Breneman, C. A. Cattell, K. Goetz, P. J. Kellogg, K. Kersten, J. C. Kasper, B. A. Maruca, and M. Pulupa (2012l), Electromagnetic waves and electron anisotropies downstream of supercritical interplanetary shocks, *ArXiv e-prints*.

Wilson III, L. B., D. G. Sibeck, A. Breneman, O. Le Contel, C. Cully, and V. Angelopoulos (2012m), THEMIS observations of gyrating ions and electromagnetic waves at the bow shock, *3rd Cluster THEMIS Workshop*, oct. 1-5, 2012, Boulder, CO.

Wilson III, L. B., A. Koval, D. G. Sibeck, A. Szabo, C. A. Cattell, J. C. Kasper, B. A. Maruca, M. Pulupa, C. S. Salem, and M. Wilber (2012n), Shocklets, SLAMS, and field-aligned ion beams in the terrestrial foreshock, *AGU Fall Meeting Abstracts*, pp. SH21B–2206, dec. 3-7, San Francisco, CA.

Winglee, R. M., and P. J. Kellogg (1990), Electron beam injection during active experiments. I - Electromagnetic wave emissions, *J. Geophys. Res.*, *95*, 6167–6190, doi:10.1029/JA095iA05p06167.

Winglee, R. M., J. D. Menietti, and H. K. Wong (1992), Numerical simulations of bursty radio emissions from planetary magnetospheres, *J. Geophys. Res.*, *97*, 17,131–+, doi:10.1029/92JA01521.

Winske, D., and M. M. Leroy (1984), Diffuse ions produced by electromagnetic ion beam instabilities, *J. Geophys. Res.*, *89*, 2673–2688, doi:10.1029/JA089iA05p02673.

Winske, D., and P. C. Liewer (1978), Particle simulation studies of the lower hybrid drift instability, *Phys. Fluids*, *21*, 1017–1025, doi:10.1063/1.862321.

Winske, D., and K. B. Quest (1988), Magnetic field and density fluctuations at perpendicular supercritical collisionless shocks, *J. Geophys. Res.*, *93*, 9681–9693, doi:10.1029/JA093iA09p09681.

Winske, D., K. B. Quest, M. Tanaka, and C. S. Wu (1985), Plasma heating at collisionless shocks due to the kinetic cross-field streaming instability, *J. Geophys. Res.*, *90*, 123–136, doi:10.1029/JA090iA01p00123.

Winske, D., J. Giacalone, M. F. Thomsen, and M. M. Mellott (1987), A comparative study of plasma heating by ion acoustic and modified two-stream instabilities at subcritical quasi-perpendicular shocks, *J. Geophys. Res.*, *92*, 4411–4422, doi:10.1029/JA092iA05p04411.

Winske, D., V. A. Thomas, N. Omidi, and K. B. Quest (1990), Re-forming supercritical quasi-parallel shocks. II - Mechanism for wave generation and front re-formation, *J. Geophys. Res.*, *95*, 18,821–18,832, doi:10.1029/JA095iA11p18821.

Winterhalter, D., and M. G. Kivelson (1988), Observations of the earth's bow shock under high Mach number/high plasma beta solar wind conditions, *Geophys. Res. Lett.*, *15*, 1161–1164, doi:10.1029/GL015i010p01161.

Wong, H. K., and M. L. Goldstein (1987), Proton beam generation of whistler waves in the earth's foreshock, *J. Geophys. Res.*, *92*, 12,419–12,424, doi:10.1029/JA092iA11p12419.

Wong, H. K., and M. L. Goldstein (1990), A mechanism for bursty radio emission in planetary magnetospheres, *Geophys. Res. Lett.*, *17*, 2229–2232, doi:10.1029/GL017i012p02229.

Wong, H. K., and C. W. Smith (1994), Electron beam excitation of upstream waves in the whistler mode frequency range, *J. Geophys. Res.*, *99*, 13,373–+, doi:10.1029/94JA00821.

Wong, H. V. (1970), Electrostatic Electron-Ion Streaming Instability, *Phys. Fluids*, *13*, 757–760, doi:10.1063/1.1692983.

Woods, L. C. (1963), Plasma Instabilities Induced by Resistivity Gradients, *Phys. Fluids*, *6*, 729–736, doi:10.1063/1.1706803.

Woods, L. C. (1964), Finite Amplitude Effects on Hydromagnetic Waves, *Phys. Fluids*, *7*, 1987–1995, doi:10.1063/1.1711108.

Woods, L. C. (1969a), Critical Alfven-Mach numbers for transverse field MDH shocks, *Plasma Phys.*, *11*, 25–34, doi:10.1088/0032-1028/11/1/004.

Woods, L. C. (1969b), Anomalous Resistivity from Drift Waves in a Magnetoplasma Shock Wave, *Phys. Fluids*, *12*, 1635–1641, doi:10.1063/1.1692719.

Woods, L. C. (1969c), Jump conditions for a two-fluid magnetoplasma, *Plasma Phys.*, *11*, 967–972, doi:10.1088/0032-1028/11/12/001.

Woods, L. C. (1971a), On double-structured, perpendicular, magneto-plasma shock waves, *Plasma Phys.*, *13*, 289–302, doi:10.1088/0032-1028/13/4/302.

Woods, L. C. (1971b), Generalized theory of the stabifity of shock waves in magnetogasdynamics, *J. Plasma Phys.*, *6*, 615–+, doi:10.1017/S0022377800006334.

Wu, C. S. (1982), Physical mechanisms for turbulent dissipation in collisionless shock waves, *Space Sci. Rev.*, *32*, 83–97, doi:10.1007/BF00225178.

Wu, C. S. (1984), A fast Fermi process - Energetic electrons accelerated by a nearly perpendicular bow shock, *J. Geophys. Res.*, *89*, 8857–8862, doi:10.1029/JA089iA10p08857.

Wu, C. S., D. Winske, K. Papadopoulos, Y. M. Zhou, S. T. Tsai, and S. C. Guo (1983), A kinetic cross-field streaming instability, *Phys. Fluids*, *26*, 1259–1267, doi:10.1063/1.864285.

Wu, C. S., D. Winske, M. Tanaka, K. Papadopoulos, K. Akimoto, C. C. Goodrich, Y. M. Zhou, S. T. Tsai, P. Rodriguez, and C. S. Lin (1984), Microinstabilities associated with a high Mach number, perpendicular bow shock, *Space Sci. Rev.*, *37*, 63–109, doi:10.1007/BF00213958.

Wu, M., Q. Lu, C. Huang, and S. Wang (2010a), Transverse instability and perpendicular electric field in two-dimensional electron phase-space holes, *J. Geophys. Res.*, *115*, A10,245, doi:10.1029/2009JA015235.

Wu, P., D. Winske, S. P. Gary, N. A. Schwadron, and M. A. Lee (2009), Energy dissipation and ion heating at the heliospheric termination shock, *J. Geophys. Res.*, *114*, A08,103, doi:10.1029/2009JA014240.

Wu, P., K. Liu, D. Winske, S. P. Gary, N. A. Schwadron, and H. O. Funsten (2010b), Hybrid simulations of the termination shock: Suprathermal ion velocity distributions in the heliosheath, *J. Geophys. Res.*, *115*, A11,105, doi: 10.1029/2010JA015384.

Wuest, M., D. S. Evans, J. P. McFadden, W. T. Kasprzak, L. H. Brace, B. K. Dichter, W. R. Hoegy, A. J. Lazarus, A. Masson, and O. Vaisberg (2007), Review of Instruments, *ISSI Sci. Rep. Ser.*, *7*, 11–116.

Wüest, M., Evans, D. S., & von Steiger, R. (Ed.) (2007), *Calibration of Particle Instruments in Space Physics*, ESA Publications Division, Keplerlaan 1, 2200 AG Noordwijk, The Netherlands.

Wygant, J. R., M. Bensadoun, and F. S. Mozer (1987), Electric field measurements at subcritical, oblique bow shock crossings, *J. Geophys. Res.*, *92*, 11,109–11,121, doi: 10.1029/JA092iA10p11109.

Wygant, J. R., A. Keiling, C. A. Cattell, M. Johnson, R. L. Lysak, M. Temerin, F. S. Mozer, C. A. Kletzing, J. D. Scudder, W. Peterson, C. T. Russell, G. Parks, M. Brittnacher, G. Germany, and J. Spann (2000), Polar spacecraft based comparisons of intense electric fields and Poynting flux near and within the plasma sheet-tail lobe boundary to UVI images: An energy source for the aurora, *J. Geophys. Res.*, *105*, 18,675–18,692, doi:10.1029/1999JA900500.

Wygant, J. R., A. Keiling, C. A. Cattell, R. L. Lysak, M. Temerin, F. S. Mozer, C. A. Kletzing, J. D. Scudder, V. Streltsov, W. Lotko, and C. T. Russell (2002), Evidence for kinetic Alfvén waves and parallel electron energization at 4-6 R_E altitudes in the plasma sheet boundary layer, *J. Geophys. Res.*, *107*, 1201, doi:10.1029/2001JA900113.

Wygant, J. R., C. A. Cattell, R. Lysak, Y. Song, J. Dombeck, J. McFadden, F. S. Mozer, C. W. Carlson, G. Parks, E. A. Lucek, A. Balogh, M. Andre, H. Reme, M. Hesse, and C. Mouikis (2005), Cluster observations of an intense normal component of the electric field at a thin reconnecting current sheet in the tail and its role in the shock-like acceleration of the ion fluid into the separatrix region, *J. Geophys. Res.*, *110*, A09,206, doi:10.1029/2004JA010708.

Xiang, N., and J. R. Cary (2008), Second-Harmonic Generation of Electron-Bernstein Waves in an Inhomogeneous Plasma, *Phys. Rev. Lett.*, *100*(8), 085,002–+, doi: 10.1103/PhysRevLett.100.085002.

Yadav, S. K., A. Das, P. Kaw, and S. Sengupta (2009), Anomalous energy dissipation of electron current pulses propagating through an inhomogeneous collisionless plasma medium, *Phys. Plasmas*, *16*(4), 040,701–+, doi:10.1063/1.3122939.

Yamagiwa, K. (1977), Lower hybrid waves in a coaxial double-plasma, *J. Phys. Soc. Japan*, *43*, 1034–1041.

Yamagiwa, K., H. Kozima, and K. Kato (1976), Ion heating by lower hybrid waves, *Phys. Lett. A*, *55*, 411–+.

Yan, H., A. Lazarian, and V. Petrosian (2008), Particle Acceleration by Fast Modes in Solar Flares, *Astrophys. J.*, *684*, 1461–1468, doi:10.1086/589962.

Yang, Z. W., Q. M. Lu, B. Lembège, and S. Wang (2009), Shock front nonstationarity and ion acceleration in supercritical perpendicular shocks, *J. Geophys. Res.*, *114*, 3111–+, doi: 10.1029/2008JA013785.

Yang, Z. W., B. Lembège, and Q. M. Lu (2011), Impact of the nonstationarity of a supercritical perpendicular collisionless shock on the dynamics and energy spectra of pickup ions, *J. Geophys. Res.*, *116*, A08,216, doi:10.1029/2010JA016360.

Yin, L., and M. Ashour-Abdalla (1999), Mode conversion in a weakly magnetized plasma with a longitudinal density profile, *Phys. Plasmas*, *6*, 449–462, doi:10.1063/1.873211.

Yoon, P. H. (2011), Large-amplitude whistler waves and electron acceleration, *Geophys. Res. Lett.*, *38*, L12105, doi: 10.1029/2011GL047893.

Yoon, P. H., and A. T. Y. Lui (2006), Quasi-linear theory of anomalous resistivity, *J. Geophys. Res.*, *111*, 2203–+, doi: 10.1029/2005JA011482.

Yoon, P. H., and A. T. Y. Lui (2007), Anomalous resistivity by fluctuation in the lower-hybrid frequency range, *J. Geophys. Res.*, *112*, 6207–+, doi:10.1029/2006JA012209.

Yoon, P. H., C. S. Wu, and M. E. Mandt (1992), Ion heating by kinetic cross-field streaming instability due to reflected ions at a quasiperpendicular shock, *Phys. Fluids B*, *4*, 719–729, doi: 10.1063/1.860270.

Young, T. S. T., J. D. Callen, and J. E. McCune (1973), High-Frequency Electrostatic Waves in the Magnetosphere, *J. Geophys. Res.*, *78*, 1082–1099, doi:10.1029/JA078i007p01082.

Yu, M. Y., P. K. Shukla, and K. H. Spatschek (1978), Nonlinear propagation of lower-hybrid waves in an inhomogeneous plasma, *J. Plasma Phys.*, *20*, 189–203, doi: 10.1017/S0022377800021498.

Yuan, X., I. H. Cairns, and P. A. Robinson (2007), Simulation of Energetic Electron Bursts Upstream of Re-Forming Shocks, *Astrophys. J.*, *671*, 439–446, doi:10.1086/522686.

Yuan, X., I. H. Cairns, and P. A. Robinson (2008a), Numerical simulation of electron distributions upstream and downstream of high Mach number quasi-perpendicular collisionless shocks, *J. Geophys. Res.*, *113*, 8109–+, doi:10.1029/2008JA013268.

Yuan, X., I. H. Cairns, L. Trichtchenko, and R. Rankin (2008b), Effects of shock parameters on upstream energetic electron burst events, *J. Geophys. Res.*, *113*, A09,106, doi: 10.1029/2008JA013309.

Yuan, X., I. H. Cairns, L. Trichtchenko, R. Rankin, and D. W. Danskin (2009), Confirmation of quasi-perpendicular shock reformation in two-dimensional hybrid simulations, *Geophys. Res. Lett.*, *36*, 5103–+, doi:10.1029/2008GL036675.

Yue, C., Q. G. Zong, H. Zhang, Y. F. Wang, C. J. Yuan, Z. Y. Pu, S. Y. Fu, A. T. Y. Lui, B. Yang, and C. R. Wang (2010), Geomagnetic activity triggered by interplanetary shocks, *J. Geophys. Res.*, *115*, 0–+, doi:10.1029/2010JA015356.

Zaitsev, V. V., O. G. Parfenov, and A. V. Stepanov (1978), The Structure of the Turbulent Shock Wave Propagating in the Solar Atmosphere across the Magnetic Field, *Solar Phys.*, *60*, 279–291, doi:10.1007/BF00156528.

Zhang, Y., and H. Matsumoto (1998), Magnetic noise bursts near the interplanetary shock associated with the coronal mass ejection event on February 21, 1994: The Geotail observations, *J. Geophys. Res.*, *103*, 20,561–20,580, doi:10.1029/98JA01234.

Zhang, Y., H. Matsumoto, and H. Kojima (1998a), Bursts of whistler mode waves in the upstream of the bow shock: Geotail observations, *J. Geophys. Res.*, *103*, 20,529–20,540, doi: 10.1029/98JA01371.

Zhang, Y., H. Matsumoto, and H. Kojima (1998b), Lion roars in the magnetosheath: The Geotail observations, *J. Geophys. Res.*, *103*, 4615–4626, doi:10.1029/97JA02519.

Zhang, Y., H. Matsumoto, H. Kojima, and Y. Omura (1999a), Extremely intense whistler mode waves near the bow shock: Geotail observations, *J. Geophys. Res.*, *104*, 449–462, doi: 10.1029/JA104iA01p00449.

Zhang, Y., H. Matsumoto, and H. Kojima (1999b), Whistler mode waves in the magnetotail, *J. Geophys. Res.*, *104*, 28,633–28,644, doi:10.1029/1999JA900301.

Zhang, Y. L., H. Matsumoto, and Y. Omura (1993), Linear and nonlinear interactions of an electron beam with oblique whistler and electrostatic waves in the magnetosphere, *J. Geophys. Res.*, *98*, 21,353–+, doi:10.1029/93JA01937.

Zheleznyakov, V. V., and E. I. Zlotnik (1975), Cyclotron wave instability in the corona and origin of solar radio emission with fine structure. I - Bernstein modes and plasma waves in a hybrid band, *Solar Phys.*, *43*, 431–451, doi:10.1007/BF00152366.

Zhou, M., X. H. Deng, S. Y. Li, Y. Pang, A. Vaivads, H. Rème, E. Lucek, S. Fu, X. Lin, Z. G. Yuan, and J. F. Wang (2009a), Observation of waves near lower hybrid frequency in the reconnection region with thin current sheet, *J. Geophys. Res.*, *114*, 2216–+, doi:10.1029/2008JA013427.

Zhou, M., X. Deng, S. Fu, R. Tang, Y. Hu, S. Li, A. Vaivads, M. Andre, X. Lin, M. Lin, and X. Zhou (2009b), Observation of the lower hybrid waves near the three-dimensional null pair, *Science in China G: Physics and Astronomy*, *52*, 626–630, doi:10.1007/s11433-009-0088-z.

Zhou, M., M. Ashour-Abdalla, X. Deng, D. Schriver, M. El-Alaoui, and Y. Pang (2009c), THEMIS observation of multiple dipolarization fronts and associated wave characteristics in the near-Earth magnetotail, *Geophys. Res. Lett.*, *36*, 20,107–+, doi:10.1029/2009GL040663.

Zhou, Y. M., H. K. Wong, and C. S. Wu (1983), Lower hybrid drift instability with temperature gradient in a perpendicular shock wave, *J. Geophys. Res.*, *88*, 3026–3034, doi: 10.1029/JA088iA04p03026.

Zhou, Y. M., Y. Y. Li, and C. S. Wu (1984), Stabilizing effects of a magnetic field gradient in a perpendicular shock wave on electron-cyclotron-drift instability, *Phys. Fluids*, *27*, 2049–2054, doi:10.1063/1.864862.

Zong, Q., X. Zhou, Y. F. Wang, X. Li, P. Song, D. N. Baker, T. A. Fritz, P. W. Daly, M. Dunlop, and A. Pedersen (2009), Energetic electron response to ULF waves induced by interplanetary shocks in the outer radiation belt, *J. Geophys. Res.*, *114*, 10,204–+, doi:10.1029/2009JA014393.

L.B. Wilson III, Department of Physics and Astronomy, University of Minnesota, 116 Church St SE, Minneapolis, MN 55455, USA. (wilson@physics.umn.edu)